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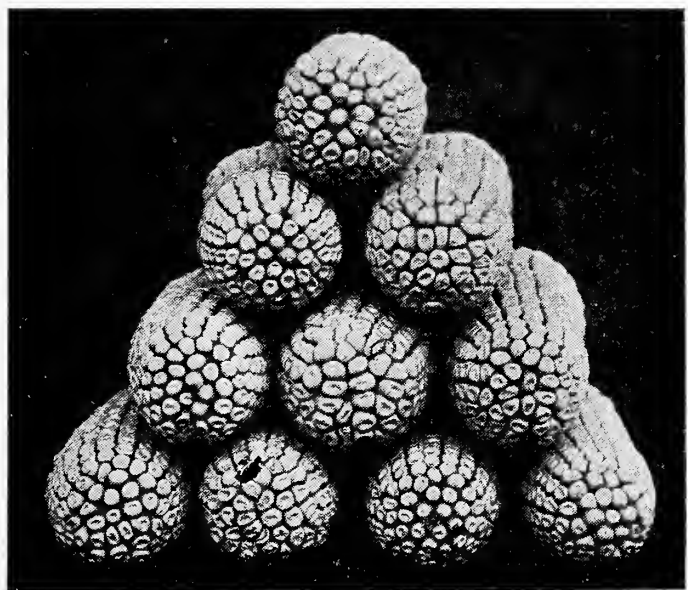
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GREAT VALLEY MILLS
PAOLI, PA.

- *FARM* -
MANUAL



*“Putting Good Seed in Fertile Soil
Is an Investment”*

GREAT VALLEY SEEDS ARE *GOOD* SEEDS

2-22-22

Foreword

IT is with pleasure we issue our Farm Mannual, with greetings to our patrons and friends. In presenting it we take the occasion to thank you for the patronage we have been receiving, and to send a personal message of appreciation to all who have sent us their orders since the inauguration of our business.

We aim to furnish our customers only the very best quality, and do not pretend to compete with low priced merchandise.

Experience has taught us that the best is the cheapest in the end. We realize that your success is our success, and the planting of choice seed or the feeding of high class feed is something one cannot afford to overlook.

To those that cannot visit us, we ask you to give us a trial order. You may rely on our giving your interests careful attention, for we value your permanent patronage, and want you to be thoroughly pleased.

We solicit correspondence, and any desired information will be willingly given to the best of our ability.

First and last we want you to be thoroughly pleased in all your dealings with the GREAT VALLEY MILLS. Our distributing plants at Paoli, Newtown Square, Exton and the Valley Mill stand fully equipped and ready to serve you.

Introduction

THE PURPOSE OF THIS BOOKLET is to put before the business farmer a digest of all the dependable information obtainable on each of the principle farm crops and projects.

The statistical compilation of several hundred authorities are brought together, compared, and reconciled, producing an unbiased and reasonably accurate statement of actual eastern farm business methods. We give special credit to U. S. Dept. of Agriculture, Penna. Dept. of Agriculture, Pennsylvania, and other State Colleges of the U. S. through their extension Depts., International Harvester Co., New York and Michigan Potato Growers Association for a great deal of the valuable information contained herein.

We do not attempt to discuss all local conditions, as they are well known to most of our customers.

It will, however, be our pleasure to advise with you on specific local matters at any time.

We feel that the experience gained and the knowledge obtained through the distribution and follow-up work on results of our high grade seeds, feeds, fertilizers, lime, etc., have enabled us to put information in this booklet that will be of service to its recipients. Hang it up for ready reference.

SEED SECTION

THE modern seed buying public is on the higher level. It has grave doubts today about every claim for the unknown source, the "Just as good seeds," or the claim for a positive source yet no written guarantee to sustain such claims.

There are so many exaggerations, so many proofs of bad results caused by low germination, imported seed and poor seed, that the public is now in a receptive mood to consider only quality seed.

Our seeds are carefully selected as to Purity, Germination and Source, and are sold subject to your approval and test. If they are not satisfactory in every way you may return them within five days at our expense and have your money refunded.

ALFALFA



Advantages of Alfalfa

1. A desirable long time perennial.
2. Worth more per acre than other crops.
3. Is a sure crop—not dependent on rain.
4. Enriches the soil.
5. Can be sown on poor land.
6. Used in rotation, improves fertility of soil for other crops.
7. Contains more protein than any other farm crop.
8. It increases farm values.
9. Frequent cutting destroys weeds.

AN acre of good alfalfa produces twice as much digestable nutrients as an acre of good Red or Alsike Clover, the digestable protein being three times as great.

Alfalfa is a perennial, making good yields for a long term of years on any well limed, well drained land, and it thus reduces the labor of caring for a given area of ground. The product is worth far more per acre than any crop you can produce, because the labor of harvesting is

distributed over a long period, the last cutting coming just at a time when a farmer needs it; when pastures are dry and parched and he has no other green forage.

Alfalfa is also a sure crop because it is not dependent on rain: the roots grow deep enough to get moisture under any condition. It enriches the soil because of its nitrogen-gathering habits also its habit of adding humus to the soil thus making it possible for the ground to retain more moisture than it otherwise could, thereby insuring larger yields from the crops that follow. In addition to bringing up moisture the long alfalfa roots bring up phosphorus, potash, and other valuable plant foods from a depth not reached by other crops. In other words it farms another farm deeper down than the land you have been farming all these years.

These facts justify the insistence that farmers should adopt this slogan **ALFALFA ON EVERY FARM !**

Climate. Our climate is favorable to alfalfa, as proven by the success that follows seedings of this valuable crop in our eastern states.

All that is necessary therefore is to determine to succeed, then stick to it.

Your land will grow alfalfa successfully if the following essential principles are observed.

Drainage. Select well drained soil, any field that will raise wheat successfully is satisfactory for alfalfa.

Lime. Sour land should be limed, one thousand to two thousand pounds of lime per acre is usually about the proper amount.

However it will be well to have your county agents test your soil for lime requirements.

Fertilizers. Alfalfa is often grown on very poor land, in fact more profits may be expected from alfalfa on poor ground than from any other crop on the same ground, but it is well in getting a start to have your ground well fertilized: two hundred pounds of nitrate of soda per acre is very frequently used to start the plants.

Alfalfa dearly loves sixteen per cent. Acid Phosphate, this is very beneficial if applied at the rate of three hundred to four hundred pounds per acre.

Tillage. Ground for alfalfa should be disked thoroughly, rolled, and worked down to a solid seed bed with a fine dust mulch on top to retain moisture. One of the causes of failure in getting a stand of alfalfa is sowing in a loose seed bed, the soil dries out quickly and the little root-lets die for want of moisture; therefore the insistence:—have a firm seed bed. The greatest enemy we have to contend with in getting a stand of alfalfa is weeds, this may be overcome to a great extent by tillage in the preparation of the field, and the planting of a sufficient quantity of seed (20 to 30 pounds per acre) to smother out the weeds at the start.

The recommendation of ten to fifteen pounds of seed per acre is sufficient under exceptionally favorable condition, but one may draw

his own conclusions about what will grow in the spaces between the alfalfa plants if the alfalfa is not there.

Once well established with a good root system and at least one year's crop harvested, alfalfa soon destroys weeds, particularly the annual and biennial varieties. The exception to this rule are the weeds and grasses that grow close to the ground such for instance as plantain and blue grass, these unless eradicated by cultivation between cuttings will gradually and persistently crowd the alfalfa from the field. It is becoming a common practice to use alfalfa in a four or five year rotation turning it under to improve the fertility of the soil thus making bigger and better crops of corn, oats, potatoes, wheat etc., that may follow.

If this method is considered desirable the alfalfa seed may be drilled in the wheat in the spring with very satisfactory results.

Methods of Seeding. Four recognized methods used in this territory for getting a stand of alfalfa are:

1. Plant in grain fields during March or April as has been our common practice with Red and Alsike Clover. This seeding must be done with an alfalfa drill or some implement that covers the seed. The only objection to this method being the danger of later grain lodging and smothering out the young alfalfa plants.

2. Sow in April with a nurse crop such as barley or oats about one bushel per acre of either being sufficient to keep down weed growth and shade the young plant from the hot rays of the sun. If oats is sown as a companion crop it should be cut green for hay as the ripening of the grain draws such a great amount of moisture from the ground that should the weather be dry there is danger of checking the growth or even killing the alfalfa plants. The advantages of this method of seeding are these: Losing no time as one gets a partial crop of grain or oat hay and the light cutting of alfalfa hay from the field the first year, and should adverse weather conditions or any other condition cause a failure in the alfalfa, the ground may be disked immediately after cutting the oats or barley and re-seeded in August, in this way losing only the seed but with a possibility of gaining almost a year's time.

3. Plant in August: Plow down wheat, oats or barley stubble, rape soy beans, sweet clover, crimson clover or any other cover crop about July 10th or as soon in the summer as possible, the earlier the better, disk and roll thoroughly, sow seed any time from August 10th to 25th that the ground has sufficient moisture in it to germinate the seed.

4. Sow wheat or rye in the fall; this method is being tried out by a number of farmers and has met with considerable success. We hesitate at this time to too strongly recommend this method but feel that it has its merits and will ultimately be commonly practiced.

Seed. Our soil always contain weed seeds, for this reason we advise frequent cultivation in the preparation of the alfalfa seed bed for in this way they are killed as they germinate.

After going to this trouble to prepare the soil it would be unwise to sow seed of slow germination, seed that contains weed seed, seed that comes from a milder climate than our own, or seed that is imported to

this country through the Atlantic seaboard or through the lakes sometimes reaching the farmer and seedsman as northwestern seed,—seed which comes from the northwest but not northwestern grown seed.

It has been thoroughly demonstrated by our experimental stations and many individual farmers that it is not safe to plant any but the hardy varieties of Alfalfa. A great deal of seed on the market is adulterated with cheap imported seeds, dead or cracked seed, which may not influence the purity guarantee, but if planted the results would of course, be disastrous.

The state Experiment stations and Department of Agriculture maintain laboratories for testing the purity and germination of seeds and there are ample laws to protect the purchaser.

Dealers selling seed are usually willing to submit samples, the samples should be asked for early so that they may be sent to your State College for testing where the purity and vitality will be determined free of charge.

In asking for samples always state that you propose submitting them for test, if the sample proves to be right your next step is to be sure that the seed delivered to you is like the sample. So do not fail to word your order so as to give you full protection.

Montana, North Dakota, northern South Dakota and northern Idaho we consider the only safe sources for alfalfa seed for planting in territory north of the Mason and Dixon line or points north of Trenton in New Jersey.

This northern grown seed comes from a much more severe climate than we enjoy, the temperature varying from 100 degrees in the summer to 50 degrees below Zero in the winter, therefore—is better able to resist the changeable, uncertain weather conditions than the more southern grown seed. This southern grown seed is ordinarily nicer looking, more plump and brighter seed, germinates well, but unless the first winter is very favorable there is little left alive for the following summer.

Therefore we strongly advise the investment of two or three dollars additional for the hardy strain of tap root Alfalfa seed, grown where only the most hardy plants survive to bear seed. What is a dollar per acre if it means the difference between success and failure?

Grimm Alfalfa is rapidly becoming popular on account of its spreading root system which better withstands a freezing and thawing of the ground than do other varieties. Owing to the scarcity and consequent high price of this seed, it has not become popular in this section, where the tap-root Alfalfa from proper source is so satisfactory. The best of this also comes from the sections having extremes in climate where the principle of “survival of the fittest” holds true.

Inoculation. It is essential to inoculate the seed, except on fields that have been growing Alfalfa successfully.

The most convenient and easily handled inoculations are those gelatinous inoculants that merely require the addition of water and the

sprinkling of the seed, stir thoroughly with the hand so that the culture comes in contact with all seed. This furnishes the necessary nodule producing bacteria, enabling the plant to draw nitrogen from the air, depositing it on the roots—thus assisting the plant growth.

Harvesting. Cut Alfalfa at the right time, don't put it off—if you do, the next crop will surely be injured and may be killed. Observe the little shoots or sprouts starting from the crown of the plant at the base of the stems themselves, you will know this is a new crop coming on, that your present crop is mature and ready to cut. These little shoots will be small, an inch or two long, but will grow rapidly. If you delay cutting, the mower may cut off the tops of these shoots and while you may not realize it at the time, you have cut two crops and gathered only one. The result is that the new crop which you have set back by cutting will have to make a fresh start, and in the meantime, weeds will spring up and choke the Alfalfa, the sun will beat down, baking the ground and drawing the moisture from the surface roots.

This valuable crop should be intelligently handled in order to save the leaves, as they represent forty-five percent of the plant and sixty-five percent of the food value. The loss of ten to fifty percent of the leaves makes the hay less nutritious, less palatable, less digestible and less marketable. This waste may be overcome if the crop is cut one day, raked into windrows the next and hauled the third day, never allowed to lay in the swath over the second night if you desire nicely colored, well cured hay. Hay caps are often used with great satisfaction, but are not necessary.

It is not always practical but is very advisable to cut alfalfa in the late afternoon as the sun has evaporated the moisture from the leaves and they in turn have drawn a great portion from the stem—thus we find the plant as dry as it is possible to get it, insuring the quick drying out of the stem and the slow drying of the leaves.

For food value of alfalfa, consult table under Feeds and Feeding in this booklet.

SOME ALFALFA DON'TS

- Don't fail to provide for ample inoculation.
- Don't sow poor or weedy seed.
- Don't sow on weedy soil.
- Don't sow on sour soil.
- Don't sow on poorly drained soil.
- Don't sow on any but a finely prepared, well settled seed bed.
- Don't pasture the first or second year.
- Don't lose the leaves—they are the best part of the hay.

Great Valley Alfalfa Seed is guaranteed American northern grown.

SWEET CLOVER

Advantages of Sweet Clover

1. It is not a weed.
2. Like Alfalfa it is rich in protein.
3. It will not bloat cattle or sheep.
4. Equal to Alfalfa for pasture.
5. It is a good milk producer.
6. Furnishes early spring pasture.
7. Contains more protein than Red clover.
8. Fits well in crop rotation.
9. It is a great soil enriching crop.
10. Better than any of the common clovers as a green manure crop.
11. It is a valuable plant for honey bees.
12. Prepares the soil for alfalfa.
13. Roots are soft and give no trouble in plowing.
14. Roots being tender become inoculated more readily than alfalfa.
15. Never damages cultivated crops.
16. Its roots decay rapidly adding much nitrogen and humus to the soil.
17. Grows and will produce a crop in all parts of the United States.
18. Seeds freely in both humid and dry sections.
19. Sweet clover prevents erosion.
20. Will grow under conditions where clover and alfalfa fail:
 - (a) On land too low, too wet, or too alkali for alfalfa;
 - (b) On land too hard and compact for alfalfa;
 - (c) On soil too poor for alfalfa, especially where there is lime.
21. Seed costs less than other clover.

THE variety of Sweet Clover commonly used is the White Blossom Biennial. It often reaches a height of five to six feet the second season at the end of which time it dies. The Yellow Biennial is similar to the White, not quite so large and not so leafy. The Yellow Annual is small and spreading and has nothing to recommend it. A large White Blossom Annual variety "Hubam" has very recently been developed which promises well but has not yet been thoroughly tried out and the seed is not on the market in commercial quantities.

Success with Sweet Clover is rare unless three essentials have been provided;—namely, lime, inoculation, and scarified seed—that is, seed that has been so treated as to scratch or crack the hard coat and make it easy for moisture to penetrate and hasten germination.

Lime. It is the first and most urgent requirement of Sweet Clover. Probably more failures with Sweet Clover can be traced directly to lack of lime than to any other one cause.

Inoculation is very important and should not be neglected. Failure to inoculate the seed adds a big element of uncertainty.

Scarified Seed. The sowing of scarified seed often means the difference between a good stand and one that is very poor, or even altogether lacking. Scarified seed may be secured at a slight additional expense. And it is especially important to have it for dry climate planting.

Soil Improvement. Due to its ability to make a large, rapid growth, rich in nitrogen, on soils which are very poor and depleted of organic matter Sweet Clover is probably most valuable as a cover crop or soil improver. When sown as a cover crop at the last cultivation of corn it will often be a foot high before winter, if soil conditions are favorable. It starts very early in the spring and may again be six or eight inches high in time to plow for corn. The large fleshy roots open up and add organic matter and nitrogen to the soil and if plowed early, the root and top growth decays rapidly. If spring sown alone and allowed to grow all summer, there should be a large growth of root and two feet of tops to be plowed under in the fall or early in the spring. On land which is not in need of lime but too poor to cultivate, it has been suggested that Sweet Clover be sown and left to reseed itself for several years. The crop seems persistent when wild and would certainly build up a soil rapidly if allowed to grow and fall down for a few years.

For Hay. If cut about thirty inches high and before blossoming starts, Sweet Clover makes a hay similar to Alfalfa in nutrient value and one which live stock quickly learn to relish. Spring seeding will frequently make a hay crop of one or two tons per acre in the fall, particularly when sown alone. The first cutting the following spring, however, must be made early, generally about June 1st, when conditions are not always the best for hay-making. The leaves shatter easily and the heavy stems dry rather slowly so that it is necessary to rake before the leaves are dry enough to shatter, and to put the hay in cock until thoroughly dry. Since all new growth during the summer comes from the buds and branches on the stems, and not from the crown as with Alfalfa,—all cuttings the second season must be made high enough to leave three or four live branches. The length of the stubble necessary to provide these branches will depend much on the height and thickness of the crop, and should be determined by examination. The taller and thicker the stem the higher it will be necessary to cut it, five or six inches being generally required, setting the ordinary mower shoes as high as possible and tilting the guards upwards will usually serve. A long stubble is reported not essential when a hay crop is cut the first fall, but is desirable for winter protection.

A crop of hay may be harvested in the second summer and the second growth plowed under, pastured or harvested for hay.

For Pasture. Sweet Clover is not at first relished by animals on account of its bitter taste, but where confined upon it, all kinds of live stock seem to take to it readily, particularly if turned on it before the clover gets over six inches tall, at this time it is not so coarse or so bitter

and there is little other green forage. It seems especially desirable for pasturing sheep and hogs, a good stand carrying twenty to thirty shoats per acre through the season. When sown alone in early spring, pasturing may begin in June if the plants are six inches high, and may continue throughout the season. The second season pasturing may begin about two weeks earlier than on most other forage. The crop should be kept down fairly close as this promotes stooling and a constant supply of new growth. If the crop starts to run to seed it soon becomes coarse and should be kept the height of six or eight inches. For spring sown hog pasture a mixture of fifteen pounds of Sweet Clover and six pounds of Dwarf Essex Rape is recommended, such a mixture according to the New Jersey Experiment Station giving better results than Alfalfa pasture. When spring-sown in grain much excellent pasture for cattle may be secured after harvest, and when sown as a cover crop in corn, the fall, and sometimes the spring growth may be pastured without much loss in soil improvement value.

Cases have been reported where inoculated Sweet Clover seed sown on a depleted pasture in late winter or disked or harrowed in, in the early spring, has caught and greatly improved the carrying capacity of the pasture, first—by the forage it supplied and second, by adding to the soil nitrogen so that the desirable grasses thickened up and improved materially.

Possibly due to the bitter property known as cumerin, Sweet Clover does not seem to cause bloat in cattle and sheep and may be pastured more safely at all times than clover or alfalfa.

Sweet Clover is sometimes used as a soiling crop for cattle and hogs, cutting may begin when it is ten to twelve inches high the second season and continue until the stems become too coarse. It is one of the earliest soiling crops. Cases have been reported in the West where it was run through a cutter into the silo with very satisfactory results. It does not make the best quality of silage, however, unless it can be mixed with corn. The fall crop of the first season may be handled in this way if the weather is not suitable for making hay. The coarse second growth the second season might also be mixed with corn rendering the coarse stems more palatable. Such a mixture would be considerably higher in protein than corn alone.

Where the spring crop is put into the silo to furnish succulent feed or because of poor haying weather, it should be allowed to wilt, otherwise the water content will be too high. For the silo the crop is best harvested with a binder and handled in bundles. Sweet Clover is also a valuable honey plant.

Seeding. Sweet Clover may be sown successfully at almost any time prior to August 15th when seeded in winter grain, on pasture or bare land. Some recommend sowing on the snow in February or March, claiming that the freezing and thawing not only covers the seed but is desirable to soften the hard seed coat and promote germination.

When sown late in the spring harrowing or light disking to cover the seed is desirable. On a prepared seed bed time should be allowed

for a thorough settling and compacting of the soil by rain, rolling and harrowing. Fall or winter plowing of land for sweet clover is strongly recommended. For seeding alone thirty pounds of scarified seed is generally used, but when sown in grain or pasture land or as a cover crop fifteen to twenty pounds will probably be ample.

A FEW DON'TS

1. Don't plow deep.
2. Don't sow deep.
3. Don't cut low in mowing—at least six inches high.
4. Don't have sub-soil loose.
5. Don't be afraid to sow sweet clover.
6. Don't plant the yellow annual sweet clover. The white biennial or the annual Hubam is better.

Great Valley Sweet Clover Seed is what you want.

RED CLOVER

RED CLOVER may justly be styled the corner stone of Agriculture in the North central and Eastern states. Either alone or in mixtures with grasses for hay or pasture, it generally constitutes from $1/8$ to $1/3$ of the total area of cultivated land on most successful farms throughout this area, and is an important crop far beyond the boundary. For centuries it has constituted one of the important factors in maintaining a permanent system of agriculture in the old world. In this country for a century and a half it has assumed a more and more important roll in conserving the natural resources of the soil, thereby tending to maintain the profitable yields of the staple agricultural products.

Red clover is utilized both as a hay and pasture crop and often as a soiling crop. It is sometimes used as a green manure crop to be plowed under if the ground is poor in humus. Even where it is cut for hay and only the roots and stubble turned under it has a marked influence in increasing the yield of succeeding crops. It makes an ideal hay for cattle and in clover sections should constitute from $1/2$ to $2/3$ of the roughage ration of milk cows. Sheep and young stock of all kinds make excellent gains on either the pasture or the hay. In addition to its usefulness as a food for animals it has a most important effect upon the land in maintaining the supply of nitrogen in the soil. By means of the nitrogen-fixing organism on its roots the red clover plant is able to gather large quantities of nitrogen from the air and leave it in the soil in a form which can readily be utilized by growing crops. It not infrequently happens that the yield of a grain crop can be doubled by the growing and plowing under of a crop of clover. The most serious problem at present confronting the American farmer in many of the clover sections is the increasing difficulty of successfully maintaining stands of clover upon the farm.

In continuous planting of cultivated crops such as corn, wheat, oats, etc., and the consequent depletion of the soil humus and plant food, the

difficulty of growing red clover is greatly increased. This condition must be met and solved, since the loss of red clover or its equivalent from the rotation leads rapidly to a run down farm and unprofitable crop yields.

It should be emphasized, however, that the mere introduction of red clover into the farm rotation is not in itself a sufficient procedure to maintain indefinitely the productivity of the farm.

The clover plant adds only the nitrates to the soil and removes large quantities of potash, phosphorus, and lime from the soil,—especially when cut for hay and the manure resulting therefrom is not returned to the land. The increased supply of nitrogen may, in fact, stimulate the soil to increased yield of other crops temporarily, only to leave it after a few years in a condition worse than if no clover had been grown, unless the other elements of plant food have been applied, i. e. lime phosphoric acid, potash inoculation.

Characteristics of Good Seed. Good Red Clover Seed is plump or well filled, bright with a slight lustre, the color of individual seeds ranging from violet to light yellow. The individual seeds should be at least of medium size and fairly uniform. The seed should be free from adulterants of any kind and also free from the seed of noxious weeds. True American grown is the only safe seed.

Characteristics of Poor Seed. Red Clover seed may be poor and undesirable from several points of view. Such seed is constantly being sold to farmers and should be recognized and rejected. It may be poorly developed, many seeds being shriveled and dull brown in color. Such seeds will not produce plants. Often Red Clover is adulterated by the use of yellow trefoil, dead clover seed, cheap imported seed or weedy screenings. Each of these constituents reduces the stand of healthy plants and makes the purchaser pay for what he does not get, transportation included. He is also likely to get an undesirable crop of weeds, some of which may become a decided menace to his locality.

Preparation of the Seed Bed. Clover is usually seeded in the spring on winter grain. In such cases no special preparation of the seed bed is necessary as the frost has usually cracked the ground sufficiently to render natural covering a reasonable certainty. If seeded with spring sown nurse crop, the preparation accorded the land for the grain is usually sufficiently thorough for successful results with Red Clover; but it is necessary to have the seed bed fine and reasonably firm if prompt germination and proper establishment of the young plant is to be accomplished.

When clover is seeded alone—(a very desirable practice on poor, run down farms) a firm, fine, well settled seed bed is highly desirable.

For this reason the clover should not be seeded on freshly plowed land, which has been given no opportunity to settle. Several workings with soil packers or harrows are usually necessary unless a heavy rain intervenes to settle the ground to the proper condition. If the ground has been planted to an inter-tilled crop, such as corn, plowing is not always necessary as a good disking will generally put the ground in proper condition for Red Clover. It should be remembered that Red Clover, es-

pecially in its early stages of development, is not drought resistant; in seasons of drought, or on land which drought effects badly, special care should be taken looking to the conservation of the moisture in the soil, by a deep early tillage followed by thorough packing of the under soil, leaving a fine dust mulch on the surface.

Lime. There are certain things that Clover demands, one of the most important is lime. It has been demonstrated that the bacteria which live in close relationship with Clover, and which by complicated processes take nitrogen from the air and render it available to the plant, cannot live in a highly acid soil. The presence of sorrel, moss and certain other plants is a fairly accurate indication of soil acidity; correct this with lime.

Fertilizers for Red Clover. Under ordinary conditions the Red Clover crop is able to succeed by utilizing whatever fertilizer has been used in connection with the crops immediately preceding or with which the clover is sown; but on soils that are somewhat low in fertility, profitable returns are made more certain by a light application of phosphoric acid and potash.

Inoculation. In order to make its best growth, the Red Clover plant must be supplied with nitrogen gathering bacteria on its roots. Fortunately, this crop has been grown so long in this country that most soils appear to be fairly well supplied with these germs. While it has not been the common practice to inoculate Red Clover seed, one will always be well repaid for the slight additional expense.

Seeding. Red Clover often fails to catch because it is not planted sufficiently deep to insure proper moisture condition for the young seedlings. In light or sandy soils the seeds should be covered one and one-half to two inches deep, while on clay or loam soil the covering should be about one inch.

ALSIKE CLOVER

I NTERMEDIATE in general appearance between the white and red clovers, and erroneously supposed to be a hybrid between the two, is alsike clover, also called Swedish clover. Alsike is especially adapted to wet soils and also to soils which are too low in humus to grow red clover to advantage. The blooms are excellent as honey producers. In comparison with red clover which lasts only two years, the alsike lasts for three to five years, or even longer. The seed is much smaller and eight to ten pounds per acre is an ample seeding. The hay is somewhat richer pound for pound than the ordinary red clover but only one crop is procurable in a season and this is not generally as heavy as even the first crop usually produced by the ordinary red clover. It is hardier than either the Mammoth or ordinary clover but lodges worse than either. For this reason it is usually best to seed it in a mixture with ordinary red clover or Timothy to prevent its lodging. Great quantities of alsike seed is imported from Canada which seed usually contains Canada Thistle. True American seed should always be insisted upon. Inoculation and general cultural methods are about the same as for red clover.

CRIMSON CLOVER

CRIMSON CLOVER is used more extensively than any other legume as a cover crop in Delaware and Maryland and is of unquestioned value in maintaining and improving the nitrogen and organic matter content of the soil. A good crimson clover sod plowed in late April or early in May has proved about as beneficial to the next crop as a coat of manure, and continuous profitable crops of corn have been grown with the assistance of some phosphoric fertilizer where a stand of clover was secured by sowing at the last cultivation.

Crimson clover will start earlier and make more rapid early growth than any other legume (except possibly sweet clover or alfalfa) so that it is ready for plowing at an early date. The present low price of seed makes it a very economical cover crop.

Soil and Climatic Requirements. Crimson Clover will not survive the winter in this state with any certainty except in some of the southeastern counties, although it may be sown with some degree of success wherever Clouds Yellow Dent corn may be matured. The crop seems to do well on almost any type of soil although it is not so well suited to very poor or droughty land as winter vetch. It is sometimes spoken of as a better crop with which to maintain or improve a fairly good soil rather than a means of building up a very poor one. Crimson Clover will not thrive on very sour land especially if the soil is also rather low in fertility. It is much more apt to winter kill on land which is poorly drained but is possibly less exacting in both these respects than red clover.

Time of Seeding. Crimson Clover is commonly sown in Pennsylvania prior to the last cultivation of corn, orchards or truck crops or following the latter if they are harvested early. The earlier the crop can be sown the larger growth will be secured for winter, and the less danger of winter killing. In standing crops such as corn, the seed should be sown in July if possible, or at least before August 10th. When given the full use of the land after the early crops, later sowing may succeed but later than August 15th is seldom safe. When sown outside the extreme southeastern section, August 1st should be considered the latest safe date, and some other crop such as winter vetch, wheat or rye should preferably be added to the seeding.

Since crimson clover is sown at the hottest and driest season of the year, moisture conditions should be as favorable as possible. If the ground is dry it will generally be better to wait until after a good rain before sowing, even though this delays seeding considerably. The seed will not germinate in a very dry soil, a light rain may serve to germinate it, but not to keep the seedlings alive. The seed should always be covered by shallow cultivation immediately after sowing. If a small drill or one of the light weeder seeders can be used, a better and more uniform stand can generally be secured with less seed.

Rate of Seeding. Fifteen pounds of seed is generally used per acre although with good seed, favorable conditions, or drill sowing, good

stands can be secured with twelve pounds. When seed or soil conditions are not the best, twenty to twenty-five pounds should be used. To avoid failure follow these instructions and use only seed of strong germination. Tests sometime show as little as 25% and often 50% of viable seed in commercial stocks. Where germination is low, the vigor and vitality are generally also poor, making the plants more susceptible to drought and winter injury. A great deal of the seed upon the market is over one year old, a large amount of it is imported from France and Italy, but considerable quantities are harvested in Delaware, Maryland, Tenn., and other states.

The domestic seed from the more northern producing states is to be preferred for Pennsylvania. One of the strongest arguments in its favor being by getting in touch with a careful dealer, one may easily secure seed of the present year's crop, which is harvested and threshed in June. A comparative test of new and commercial seed has shown perfect stands of the former alongside of thin stands of weaker plants from the latter. The fact that seed is fresh however, is not sufficient guarantee since it may germinate poorly on account of too early harvesting, weather injury or heating and moulding before threshing. All seed should be tested for germination before sowing. The appearance of Crimson Clover seed is a good indication of its age and vitality, good fresh seed being a bright reddish or straw yellow, while the older seed is largely of a dull, lustreless brown.

Where Red or Alsike Clover is grown in the rotation, inoculation may not be necessary for Crimson Clover, otherwise it would be advisable. Crimson Clover may be pastured profitably in the fall and early spring, where a vigorous growth is secured. While it is seldom harvested for hay this may be done where the hay is badly needed and the stubble put into some late crop such as Soy Beans, late Corn, Potatoes, Buckwheat or Millet. The hay should be cut before the heads begin to dry as the nutrient value is less later and the hairs from the ripe heads are sometimes injurious to stock.

WHITE DUTCH CLOVER

THE low growing shallow rooted white clover is adapted only to lawns or pasture. It is a perennial, making its best growth on rich moist soil, but will grow on almost any soil. When sown in mixture, it will furnish nitrogen for itself and the grasses, besides making a balanced ration. It will stand almost any amount of trampling. On account of its creeping roots stocks and its abundant production of seed, it spreads rapidly. It does not easily winter kill, and remains green from early spring until late autumn. As it does not obtain sufficient height to mow, is never used as a hay crop, but its possibilities as a pasture plant are unlimited.

Preparation of Soil and Seeding. The soil requirements for white dutch clover are about the same as for other clovers (Lime, phosphoric acid, inoculation, firm seed bed). It may be sown from early spring until autumn whenever there is sufficient moisture to germinate the seed.

TIMOTHY

THIS hardy and well known grass is distinctly a crop for hay as it does not take kindly to pasturing, it is frequently planted with the biennial clovers so that a hay crop may be secured after the clover is gone. Timothy hay contains less than 3% digestable protein, making it rather inferior quality feed to be consumed on the farm, although it is aside from alfalfa the highest priced hay on the market. The seed should be carefully selected insuring freedom from weed and an excess percentage of hulled grains. The unhulled seed has quicker germination than the hulled.

Preparation of Soil and Seeding....The common methods used in getting proper timothy are these: Plant in the wheat in the fall at the rate of twelve to fifteen pounds per acre, or in hay mixtures using about one fourth timothy. In the former planting, the cultivating and fertilizer used for the winter grain is satisfactory. In the pasture or hay mixtures, application of phosphoric acid and potash is advisable.

HAY OR PASTURE MIXTURES

PERMANENT pasture mixtures or mixtures to be used for hay should be selected with great care. Do not allow your seedman to sell you a ready made mixture unless he can tell you exactly what proportion of the different varieties of seed it contains, then make sure that those varieties are all suitable for your conditions. In selecting a mixture, one should be careful to get grasses that will thrive in his particular kind of soil, taking into consideration, the fertility, elevation, drainage and etc., also getting a succession of grasses coming in from early spring until late fall. Present all these facts to your seedsman, allow him to call at your farm, make for you a list of grasses and clovers that will thrive under your particular conditions, then if you demand economy and quality, order your seed by name and in the quantity desired.

The following are some of the best and most common grasses and clovers for pasture or hay.

<i>Name</i>	<i>Lbs. per bushel</i>	<i>Lbs. per acre</i>
Kentucky Blue Grass	14	36-75
Canada Blue Grass	14	35-75
Creeping Bent	20	40-90
Meadow Fescue	22	40-90
Orchard Grass	14	40-75
Red Top	32	40-50
Rye Grass	24	30-60
Sheep's Fescue	12	30-50
Timothy	45	20-25
Alsike	60	15-20
Red Clover	60	20-25
White Dutch Clover	60	10-15

SOILING CROPS

Canada Field Peas and Oats, Rape, Sowed Corn, Cow Peas, Oats and Spring Vetch

CANADA FIELD PEAS and OATS is the earliest spring-sown forage or soiling crop that can be used. Well inoculated Peas should be sown at the rate of one to one and one-half bushels per acre and harrowed deeply into the soil as early in the spring as the ground may be worked. Drill over this one to one and one-half bushels of good northern grown oats. The result will be an early forage for hogs or a crop that may be cut green and fed to cattle, thus affording an abundance of economical high protein feed. If five pounds of rape be added to the above mixture, it will improve the quality for hog pasture.

Rape alone sown at the rate of ten to twelve pounds per acre makes probably the highest quality forage for hogs.

Sowed Corn. (Common field corn), sowed at the rate of one and a quarter to one and one-half bushels per acre cut green about four feet high makes a vast amount of succulent feed for the dairy. This crop may be used at a time when pastures are most likely to be short.

Cow Peas. Do not confuse cow peas with Canada field peas. This plant is sensitive to frost and should not be planted until danger of frost is past.

It is pre-eminently adapted to the south, but thrives even as far north as Massachusetts. The cow pea is more of a bean, in its botanical relation, being closely allied with the lima of our garden. This plant varies in habit from a compact upright bush to a trailing vine fifteen or twenty feet long, therefore it is rather unpopular and has given way in many places, to soy beans. Cow peas will endure more acidity than alfalfa, red clover or soy beans. On very poor soils cow peas will yield more forage than soy beans. Acid Phosphate can be used profitably at the rate of two hundred to three hundred pounds per acre.

Oats and Spring Vetch. (or Tares) Makes a very satisfactory soiling crop when sown in April or May at the rate of one bushel of Oats and one and one-half bushels of Vetch per acre. Inoculation of the vetch is advisable in order to get maximum results.

CATCH CROPS

Among the valuable crops often used in event of failure of some main crop are: Oats and Canada Field Peas, Cow Peas, Oats and Vetch, Millet, Soy Beans. The first three of these valuable crops are treated under the heading "Soiling Crops" to these should be added Millet and Soy Beans.

Millet is generally considered a soil impoverisher but is extremely valuable in so much as it may be planted in mid summer and still make a great tonnage of fair quality hay.

SOY BEANS

Soy Beans are adapted to any soil that will grow corn successfully. They however, if properly fertilized, limed and inoculated will thrive on soil too poor to produce profitable crops of corn. Comparing the averages for corn, oats and soy beans, we find that from a stand point of food value, an acre of soy beans will produce forty per cent. more digestible protein and about one-third as much net energy as an acre of corn, thus making the beans especially valuable for balancing the corn ration.

Compared with oats, they will produce three times as much digestible protein and ten per cent. more energy. Therefore in southeastern Penna. where soils are especially well adapted to the production of corn, but where oats is rather uncertain, soy beans should replace oats in the rotation. A yield of twenty to thirty bushels per acre may reasonably be expected, under ordinary conditions.

The preparation of the seed bed is practically the same as for corn, but early plowing is not so essential for soy beans as for the corn crop, this allows one to plow his corn ground at the proper time, rather than hurrying to get his oats planted early, leaving the plowing for corn until the grass roots have drawn the moisture from the top of the ground. The time of planting should be governed by the varieties used, the larger, longer season beans, such as the Wilson, Virginia or Sable, which require about one hundred and thirty-five days to mature, should be planted about May 15th while the short seasoned varieties such as Ito San, Black Eyebrow, or Elton may be planted as late as June 1st, with reasonable safety. These latter varieties may be planted for hay almost any time during June.

For Hay, this valuable crop should be planted broad cast or with a grain drill at the rate of one and one-half bushels per acre (set your drill for one and one-half bushels of oats, this will sow the right amount of soys). The best varieties being: Wilson for long season, Ito San or Black Eyebrow for short season.

For Silage, this crop is most conveniently handled if sown in the row with the corn, this may be accomplished either by using a bean planter attachment for your corn drill, or by mixing the beans with the fertilizer at the rate of about eight quarts per acre. This custom of planting beans with ensilage corn furnishes a vast quantity of very valuable high protein material for the silo, and one might say grown at no expense as the bean growth does not affect the growth of corn, but on the other hand smothers the weeds thereby tending to encourage the corn growth. We are not prepared to authenticate the statement of many people that the presence of soy beans actually encourages the growth of corn by supplying nitrogen, gathered from the air to the corn roots, but our observations have been that it does not retard the growth of corn, therefore all the surplus tonnage represented by the soy beans is clear profit. The Wilson, Virginia, or Sable varieties are probably more recommended for this purpose than any others.

For Beans, the best results are obtained when planted in rows far enough apart (usually twenty-eight to thirty-six inches) to allow room for cultivation with the implements one has at hand. The best machine for planting in rows is the corn planter with bean plates or an ordinary grain drill with part of the tubes covered. Aim to plant about two inches apart.

The Black Eyebrow and Ito San are the most popular seed varieties, owing to their early maturity, thus allowing the seeding of the ground to winter grain.

For best results soy beans should always be inoculated, the commercial inoculation in gelatin form, being economical and convenient.

Fertilizer for Soy Beans need not contain nitrogen, providing the beans have been properly inoculated, but should be high in phosphoric acid and should also contain a fair amount of potash, when this can be purchased at normal prices. Two hundred to three hundred pounds of 0-12-2 Fertilizer per acre is usually all that is required.

Lime. Soy beans will grow on land too acid for clover, on the other hand they respond to the application of lime as well as clover. On very acid soils their growth is seldom satisfactory.

Time of Harvesting (for hay). Soy Beans may be cut for hay from the time the pods begin to form until the leaves begin to turn yellow. Everything considered, the best time seems to be between pod formation and full development of seed. If cut earlier, the yield will be much reduced and the curing more difficult. If cut later, hardening of the stems and loss of leaves will depreciate the quality of the hay. The highest per cent. of protein is found between blooming and pod forming. The curing of Soy Bean hay does not differ much from the curing of a heavy crop of clover or alfalfa hay. When possible, the aim should be to have the crop ready for cutting in September while the weather is still favorable for curing. A good plan is to cut the beans one day; and if the weather is favorable rake them up the next day, and the third day put them in cocks and let stand for several days. When cured in this manner no leaves will be lost, and if the cocks are well built—high and narrow—the damage by rain will be reduced to a minimum. It is not advisable to use the tedder excepting while the plants are still green or damp, on account of tearing off the leaves.

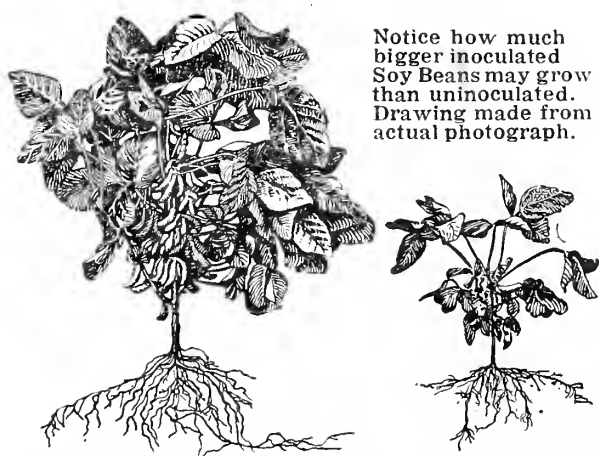
Time of Harvesting (for beans). When soy beans begin to ripen, the leaves begin to turn yellow and fall off, and in most varieties all leaves have dropped before all the pods are ripe. When it is desired to secure the greatest feeding value from soy bean straw, cutting may begin soon after the leaves begin to turn yellow. When seed alone is the object, cutting should not begin until most of the leaves have dropped off, the pods are fairly well browned and the seed is fully developed. If allowed to stand until much later than this, or until the pods are very ripe, considerable loss from scattering may result.

Time of Harvesting (for silage). The seed should be well developed before cutting, but cutting should take place before the leaves begin to

drop off. If the beans have been planted in a separate field for silage, the grain binder is undoubtedly the best implement for harvesting.

Methods of Harvesting Soy Beans. When soy beans are harvested for grains, the best method is to cut with the grain binder the same as small grain. In this case the plants should be allowed to stand until practically all of the leaves have fallen and the pods have begun to dry. In other words, the nearer the cutting can be done at the period just before shattering, the more satisfactory will be the results. If shattering commences before cutting, the best plan is to cut in the morning and evening while damp, and avoid cutting during the middle of the day. Eight or ten bundles should be placed in a shock. When shocked in this manner the crop may remain in the field until a convenient time for threshing, for practically no damage from rain will result. In an experiment at the Maryland Experiment Station shocks were left out in the weather without protection from October 15th to April 1st. No damage whatever resulted except some shattering on the outside.

Threshing Soy Beans. Soy beans may be threshed with an ordinary wheat thresher, provided the necessary changes are made to reduce the cylinder speed to 300 to 600 revolutions per minute and at the same time maintain the rest of the machining at normal speed. If the cylinder speed is not reduced the seed will be cracked or split. For small seeded varieties, such as Wilson and Sable, the cylinder may be run between 500 to 600 revolutions per minute without more than a trace of splitting or cracking. With larger seeded varieties, the speed must be reduced to 300 or 350 revolutions per minute. Sometimes it may also be necessary to lower the concaves and even remove some of them, but this is not ordinarily necessary. The amount of splitting will vary with the condition of the seed. The drier the seed the greater the danger of splitting.



Soy Beans For Increasing Soil Fertility. Soy beans, like all legumes, are able to utilize the free nitrogen of the air through the aid of certain bacteria which form nodules or tubercles on the roots. Without the presence of these bacteria, soy beans, like corn, take all their plant food from the soil, and when harvested add

nothing to the soil except the small amount of organic matter contained in the roots and stubble—therefore, “inoculate!”

Soy Beans For Soil Improvement. For soil improvement the Mammoth Yellow is unsurpassed owing to its quick growing habits. This crop may be sown almost any time during May, June or July and plowed down in the fall, thus affording a great quantity of green manure of high nitrogen content.

COVER CROPS

FOR the trucker or orchardist who cannot well practice a rotation containing legume sods and whose supply of manure is limited, the growing of cover crops which are really short season sod crops, has become almost essential to profitable production and to the maintenance of the organic matter and nitrogen content of the soil. It was once possible for this class of farmers to keep up their soil by the purchase and application of city manure, but within recent years the price has become high, the quality often poor and the supply inadequate, so that even were time or labor available to handle it, some substitute or at least supplementary source of fertility must be found. It has been amply proven that by the systematic use of cover crops and commercial fertilizer the soil can be maintained or even improved without sods or manure.

Many truck growers have dispensed with the purchase of manure entirely and although it is sometimes necessary to forego one of the money crops, (where two are grown on the same land each season) in order to give an opportunity for a good cover crop, these men feel that they are much better off financially in a term of years.

Even non-legumes will serve to keep up the organic matter, and potatoes have been grown for 20 consecutive years on the same field without reduction in yield where a crop of wheat or rye was sown as soon as the crop was dug in August and plowed under early in the spring. A complete fertilizer was used in liberal quantities on the potatoes. Where a good legume cover crop can be plowed under not only will one add as much organic matter as is contained in a good coat of manure but about as much nitrogen may also be secured as is contained in 8 tons of manure or a ton of 4-10-0 fertilizer. The fertilizer treatment may well be modified and cheapened where a legume is plowed down, and experience in New Jersey indicates that on a crimson clover sod a 2-10-5 fertilizer will give as good yields of potatoes as the same amount of a 4-10-5 goods. When such adjustment of the fertilizer formula is made, however, the commercial nitrogen should be in as available and quick acting a form as possible in order to give the crop a start until the nitrogen in the cover crop becomes abundantly available. For corn or grain on a legume sod or cover crop little should be required beside acid phosphate, and good farm practice indicates that the most economical use of commercial nitrogen is primarily to give crops a good start, depending on the nitrogen secured in other ways to carry the crop to maturity.

It is needless to dwell on the importance of organic matter in the soil further than to state that its depletion renders heavy soils stiff, cloddy and impervious, while light soils become even less retentive of moisture and plant food as the organic matter is used up by the continued growing of tilled crops.

When land lies bare over winter, washing and gulying are often destructive, and many dollars' worth of soluble plant food are leached out and lost during fall, winter and spring on the lighter soils. A cover crop

will prevent or check most of these losses, and when plowed down, the roots and top not only give up their plant food to nourish the following crops, but the weak acids formed in decay set free other insoluble mineral plant food in the soil, such as potash.

Fertility can apparently be fairly well maintained without manure in a good soil where the second crop and stubble of clover or alfalfa is plowed down every three or four years, and where some commercial fertilizer, largely phosphoric acid, is used. However, if the general farmer can secure a cover crop in the corn, his soil would be greatly improved, especially where the rotation is a long one and where the manure supply is not large. Since corn stubble is commonly plowed quite early for oats there would be little time for spring growth of a cover crop and early seeding and a good fall growth would be especially desirable.

Where some later planted crop such as corn or soy beans follows corn, ample time for a good spring growth could be allowed. Where a good cover crop of one of the legumes is secured it would probably be better from both a financial and fertility standpoint to pasture at least part of it, or if the field were smooth enough, to mow a crop of hay, plowing in the late summer for wheat rather than to put the land in oats, which are frequently unprofitable in the southern counties. Where there is no permanent pasture, this plan would furnish pasturage until the second growth on mowing land could be grazed.

How to Grow Cover Crops. To get a stand with any certainty and with the minimum amount of seed the following points are of vital importance and failure may generally be traced to neglect of one or more of them.

First: Determine which is the best crop or mixture for your conditions by studying the adaption under "What Cover Crops to Sow" on page 23, then sow at the time recommended. More full information on most of these crops may be secured on application to your farm bureau or the Extension Department of the College, or we will gladly help you.

Second: **Sow good seed;** require a germination test, which may be made at home or secured by sending a sample to the State Department of Agriculture at Harrisburg.

Bear in mind that low germination is apt to mean low vitality and vigor as well. If the test shows a high percentage of hard seeds in the case of sweet clover, have the seed scarified to secure prompt and even germination. Secure fresh seed not over one year old. This seems especially important with crimson clover which loses its vigor and viability rapidly with age. Strictly fresh seed can best be secured direct from seedsmen who buy direct from the locality where it is grown.

Third: Sow as early as moisture and other conditions permit. Early sowing gives the maximum fall growth and stooling, is the best insurance against winter killing and is especially important when the crop must be plowed early before much spring growth is possible.

Fourth: If the ground is dry wait until after a good rain before sowing, especially with small seeds or where drilling is impossible. The seed will not germinate in a dry soil and may die before rain falls; a light rain may serve to sprout it but not be sufficient to keep it alive, or a heavy rain may beat down the soil so that the seedlings cannot get up, or wash the field so that the stand is uneven. Delayed seeding is preferable to sowing in very dry soil.

Fifth: Have as fine, clean and firm a seed bed as possible, especially for the clovers.

Sixth: Cover the seed well; lightly on heavy soils but more deeply on light soil which dries rapidly. If a drill or seeder can be used, practically every seed will be covered and can be placed at the proper depth so that less seed is necessary and better stands can be secured. A small drill having 5 hoes or disks can be used in standing crops and will often pay for itself in one season through the saving of seed. If a weeder seeder is used or the seed cultivated in, another harrow or cultivator run ahead will give better coverings and germination. Unless corn blows down, it is never too late to go through the middles lightly to cover seed. A diamond tooth cultivator is a good tool for this purpose.

Seventh: Generous broadcast fertilization not only returns a profit in the cultivated crop or orchard but will help materially in securing a good cover crop; a soil must be fairly well fed to produce a money crop and a cover crop the same season.

What Cover Crops to Sow. For sowing in July or early August in orchards, corn, tomatoes or truck crops, or following early harvested truck, 15 lbs. of crimson clover will probably be cheapest and most satisfactory southeast of Reading, Harrisburg and Chambersburg. Northwest of this line crimson clover is very apt to winter kill and 10 to 12 lbs. of mammoth or red clover will be safer. On land which is sour or wet, 6 to 8 lbs. of alsike clover may be surer or red and alsike clover may be mixed. Winter vetch (inoculated) is especially good on light soils and also does well on heavier land. When sown alone 20 to 30 lbs. of seed are generally used but 10 to 15 lbs. may be sown with a clover crop to excellent advantage. When vetch is sown after August 20th in the crimson section, or much later than August 1st in the remainder of the state, the usual practice is to sow 15 to 20 lbs. of vetch with 3 to 6 pecks of rye. Vetch should be sown prior to September 10th in the southeastern part of the state and correspondingly earlier where the season is shorter.

In case the seed cannot be covered, as in late tomatoes, vineing crops or down corn, the clovers may make a fair stand without covering if the weather is moist. In such situations 10 lbs. of timothy may well be added since the seed is not expensive. It will germinate on the surface and while not a legume will make a surprisingly good sod by spring if sown early on fairly good soil. In fields where alfalfa has or may be expected to succeed, 12 to 15 lbs. of alfalfa, or better still, sweet clover, will often make an excellent and rapid growing cover crop. Without plenty of lime and inoculating, however, these crops cannot be relied upon.

Winter vetch may be sown later than the clovers, is very hardy and makes an excellent cover crop. Vetch may persist and be a weed in winter grain, and the crop almost invariably requires inoculation at first. It is well to add two or three ounces of cow-horn or round turnip seed to clover mixtures. If the season is favorable a considerable crop of turnips can often be harvested for market or stock feed, or if not needed they will add to the organic matter.

Where organic matter is badly needed or where there is danger of washing it may pay to sow rye or wheat as cover crops when one of the legumes cannot be planted in time. Rye may be sown later and is probably hardier and better for poor soils, but wheat is preferred by some where spring plowing may be delayed. Rye should never be allowed to head before plowing under, if another crop is to be put in shortly, as the straw rots very slowly and unless well cut and mixed with the soil before plowing it will form a layer in the bottom of the furrow between the surface soil and subsoil causing the former to dry out rapidly and the crop to suffer. To allow any cover crop to get very large before plowing may be detrimental to the succeeding crop in the same way, although thorough disking before plowing obviates most of this difficulty. One should also bear in mind that the growth of any luxuriant crop dries out the soil rapidly and if the cover crop is allowed to grow too late, it may be using moisture which will be needed for the next crop. This fact, that a cover crop dries the soil, however, is an added advantage in some situations where plowing would otherwise be delayed by poor drainage or wet spots in the field. For a real cheap cover crop of fair value, a mixture of 10 lbs. of rape and 1 lb. cow horn turnips may be used; this cover of course freezes down in the fall, but leaves a quantity of valuable vegetable matter to be plowed or disked down in the spring. The turnips also depositing deep in the soil valuable plant food and moisture.



Alfalfa, Inoculated



[The Same Seed and Conditions, Not Inoculated

SEED INOCULATION

IT is no longer necessary to point out the advantages of seed inoculation. Since cultures first appeared on the market, tests have conclusively proved that inoculation pays. Inoculated cover crops add as much nitrogen to the soil as could be obtained from tons of nitrate of soda, yet the expense is trifling when compared with the cost of the chemical. Many crops practically refuse to grow unless the seed has been treated. Alfalfa is most particular in this respect, but the clovers, soy beans, and cow peas are almost as dependent. The amount of hay grown upon an acre has been increased from less than a ton to four tons by inoculation alone. Add to this the value of the nitrogen added to the soil and you gain an idea of the profit inoculation produces.

Without nitrogen-fixing bacteria, legumes will rob the soil, like any other crop. If the bacteria are not present in the soil, they cannot form nodules on the roots, and the good effect of the legume crop will be lost. These facts have been proved by reports from the National and State Agricultural Departments.

The proper bacteria can be introduced into the soil by inoculation, furnishing the young plant with nitrogen-fixing bacteria from the very outset. Inoculation is not a miracle worker, and will give the best results only when proper attention has been given to the crop and soil. By liming the soil, bacteria are encouraged to make a more vigorous growth, and soon the soil responds by freely giving up a balanced ration to the growing crop, whatever its kind. Inoculating will do more to build up the soil than any other single agency. With attention to other requirements such as proper tillage, a sweetening of the soil through addition of lime and crop rotation, the soil will gratefully return richer vegetation with greater food value and without becoming impoverished. Inoculation will do for you what it has done for thousands of others if you will but give it a chance. Make your soil a favorable environment for bacteria and your results will be more profitable than any other treatment will give. Unless you bring all these conditions about, you cannot possibly receive the most profitable return from your soil.



12	acre size.....	\$9.00
3	" "	2.50
1	" "	1.00

We guarantee Farmogerm to be a pure culture of active, vigorous, nitrogen gathering bacteria of the variety indicated upon the label. We guarantee that the bacteria are bred up to a high degree of nitrogen-

gathering ability. We guarantee that each bottle of Farmogerm contains enough strong, active bacteria to inoculate the amount of seed or soil specified on the label. Always specify on your order what crop you want to inoculate, as there is a different strain of bacteria for each legume.

Alfalfa	Berseem Clover	Sweet Peas
Crimson Clover	Cow Peas	Garden Peas
Sweet Clover	Soy Beans	Garden Beans
White Clover	Canada Field Peas	Lima Beans
Red Clover	Peanuts	Lupins
Alsike Clover	Vetch	Sainfoin
Mammoth Clover	Horse Beans	Lespedeza
Burr Clover	Velvet Beans	Beggar Weed
Yellow Clover	Perennial Peas	and others.

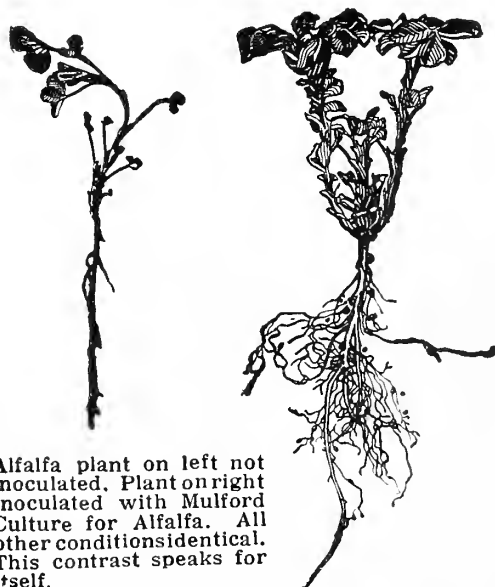
Mulford Cultures

FOR LEGUMES

5 acre size.....	\$5.00	(Dollar per acre.)
1 " "	1.50	
1/4 " "75	

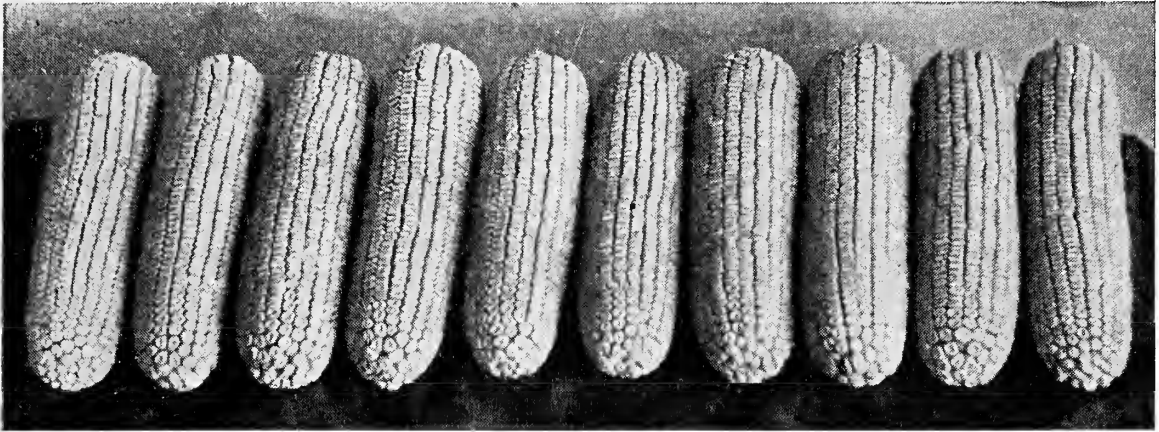
Small size supplied only in 4 varieties for Garden Peas, Garden Beans, Lima Beans, and Sweet Peas, .35c.

Each bottle of Mulford Cultures for Legumes is guaranteed to contain a pure, active, vigorous culture of nitrogen-fixing bacteria, of the proper strain for the legume indicated on the label, and in sufficient quantities to inoculate the required amount of seed or soil for the area specified on the label.



Alfalfa plant on left not inoculated. Plant on right inoculated with Mulford Culture for Alfalfa. All other conditions identical. This contrast speaks for itself.

CORN



A Desirable Type

CORN is the most important field crop in the United States. Its value is greater than the combined values of wheat, oats, barley, rye, rice and buckwheat. Among the cereals it is a "highly productive crop, yielding on the average about twice as much grain, and, including the fodder, over three times as much per acre as either wheat or oats." On its production depends, to a large extent, our enormous beef and pork industry. The questions each of us must answer about the corn we plant are these.

Will it Yield? That is, will it yield well? Has it constitution? Can we depend on it even when conditions are unfavorable?

Will it Ripen? That is, will it mature? Will it ripen every year? Is it safe for your locality? Will it be good quality?

Will it Grow? That is, has it vitality? Will it germinate? Will it grow uniformly? Giving strong, vigorous plants?

Does it Show Improvement? That is, has it breeding? Has it a distinctive type? Will it reproduce itself? Has it several years of careful selection and improvement back of it?

The best corn for a given locality is the corn that will give the greatest profit year after year if planted in that locality. We must be familiar with the conditions prevailing in a locality before we can properly judge corn for that locality.

Millions of dollars have been lost by bringing corn from the South and attempting to grow it in the North where it failed to mature. One of the most common mistakes in selecting seed corn is to lay too much stress upon one thing, forgetting all other features, some of which are of great importance. A person will often sacrifice everything to depth of kernel, size or length of ear, or place too much stress upon straightness of rows, filling out at the tip, space between rows, etc. All of which should be taken into consideration, but are not the only things nor even the most important things to be considered.

The best seed corn and the best show corn should be the same, and the object of the judge at a corn contest and of a farmer selecting his seed to plant, should be the same. In each case, the most profitable ear is the one desired. A good ear of corn must yield well. By yield, we mean that it must produce a large amount of shelled corn with a high feeding value. It must mature, not only in the long season or in the average season, but in the short season as well. To be a good seed ear, it must grow, not merely germinate, but produce a strong, vigorous plant. It must show good breeding. It should indicate that there are several years of careful selection and improvement back of it.

We are especially anxious to sell our customers the variety in our list that is best suited for his or her particular location. Too many times the customer is not considered and the corn sent where it can never mature or make a crop. We stand ready to give you this advice, through our thorough personal knowledge of varieties, and by the careful investigation along this particular line carried on for the past several years by our Pennsylvania State Extension Department.

Don't forget on looking over what we have to offer in corn (or other seeds) that you are not buying in the dark from a wholesaler's bin of shelled corn, but are getting, with every purchase of seed, years of labor and thought by the growers and breeders who are raising it and supplying us.

Among the best varieties for Southeastern Pennsylvania, New Jersey, and Delaware are:

Lancaster County Sure Crop, (silage or husking). Matures in 118 days, a consistent yielder on rich or poor soils.

This variety originated in our neighboring County of Lancaster. For customers who expect a large yield of ensilage on almost any type of soil, they cannot go wrong in this variety. It has a splendid leafy fodder, well-filled, large ears, thus you get both in your silage, a fact we are all beginning to appreciate as essential for good feed.

This is adapted to Northern part of Pennsylvania, anywhere in New York, Ohio, etc., and is recommended by our various County Farm Bureaus for all over Pennsylvania. Our Sure Crop is grown in Chester County by Mr. Hershey, son of the originator, who has been breeding for yield per acre, in other words, dollars. He contends that "The first point in production of a yellow corn, is utility." When we have this, we have everything. For instance, for the sake of appearance, the closed-end corn would seem to be the most desirable. Yet the closed-end corn tends to be short, and gives us less yield; therefore, is less desirable. On this question Mr. Hershey once wrote to the United States Department of Agriculture when the subject of rounding out the ears was being freely discussed, and declared he would sooner have an ear of corn give fourteen ounces of grain, even if an inch of cob stuck out than have the cob fully rounded and yield only twelve ounces of grain.

To keep Sure Crop true to its present qualities, and perennially vigorous, Mr. Hershey contends against breeding to a type; insists, on the

contrary; on keeping to diversified ears. To do this, he selects corn from all over his farm, from the poorest spots as well as the best. Then he shells by hand and continually mixes so that as few grains as possible from the same ear get planted together.

When the Lancaster County Farm Bureau first started its field demonstration work in the spring of 1916, it undertook variety tests of corn which up to the present time have included about thirty-seven varieties. Attention was attracted to Sure Crop during the seasons of 1915-16, when it outyielded all other varieties. When the yields were figured in each case there was a shelling test made, and the moisture was reduced to twelve per cent., or about the amount ordinarily carried in good air-dried corn. It was found that the larger varieties gave more bulk and more weight in good seasons and on good soil than "Sure Crop;" but when dry-weight and feeding value were considered—and these are the great essentials in a utility corn, "Sure Crop" proved the highest-yielding variety year in and year out.

We cite a four year average of varieties that have been found superior during all this time, and which Lancaster County Farm Bureau has retained in its tests:

Large Type White Cap	72.4 bu. per acre
Large, Lanc. Co. Leaming	74.3 bu. per acre
Lanc. Co. Sure Crop	73.4 bu. per acre
Johnson Co. White	66.2 bu. per acre
Small Type, White Cap	68. bu. per acre
Long's Yellow Dent	58. bu. per acre
Clouds Yellow Dent	66.4 bu. per acre
Small Type Leaming	67.5 bu. per acre

It will be observed that the large type Leaming by the above results outyielded the Sure Crop by a fraction of a bushel. It should also be stated that these tests were conducted on farms of more than average fertility. This fact, coupled with the other fact that there were two most excellent corn years in the last five, was responsible for placing the large type corn slightly ahead in yield. But it must also be observed that during the first three years of these tests Sure Crop ran ahead in yield. These results lead us to believe that on a farm of average fertility, with our average season in Southeastern Pennsylvania, corns of the type of Sure Crop are to be desired.

Johnson County White (silage-husking) Matures in 130 days, a consistent yielder on rich or thin soils.

This corn greatly resembles the Boone County White, being also a corn of pure pearly white color. This has become in some sections slightly more popular than the Boone County White. It is, however, a little longer-season corn, taking about five days longer to mature than Boone. It has the ability to grow and do very well on light or inclined to be sandy ground. At the national corn shows Johnson County White has repeatedly won in the past few years highest awards for White Dent corn. It breeds more true to type year in and year out than any other corn. As

moderate growing ensilage corn it is a very close second to Sure Crop, but requiring about two weeks longer growing season.

Reid's Yellow Dent (husking) matures in 118 days. Thrives well on medium soils. This is the best known yellow Dent corn grown in the corn belt. It shells out well and is rather earlier than some types of yellow Dent corn. The cob is red and the fodder is medium in size and leafy. It is too long seasoned for Pennsylvania's northern counties, but for central Pennsylvania valleys, southeastern Pennsylvania, New Jersey, Maryland, Virginia, Delaware, Ohio, W. Virginia, etc., it is a splendid husking corn. We have a wonderful strain of this corn to offer.

Improved Leaming (husking) matures in 120 days. Requires fairly good soil. We are carrying a splendid strain of this variety, grown near us. We have had personal supervision of this corn, as with many other varieties. It is rather larger, better formed ear than the old time type of Leaming. It is somewhat quicker maturing than the regular Yellow Dents; is a good yielder, with a good depth of grain. We have enthusiastic customers for this variety. This will make a good silage for further north and higher altitudes.

Early Golden Surprise, (husking,) Matures in 100 days. Fares well on any soil. This is a small-eared yellow, deep-grained Dent originating in Cumberland County. We are getting our seed from one of the best growers of this type in our county. It is an early maturer. In Farm Bureau tests of Cumberland Co. with other varieties it has shown up as a good consistent yielder. This is a valuable corn for late planting or where early maturity is desired in order that the ground may be sown to wheat.

Cloud's Yellow Dent (husking) matures in 126 days. Requires very fertile soil. Truly the King of Corn's for show purposes. When grown on very fertile soils, is probably the best corn for Southeastern Pennsylvania.

White Cap Yellow Dent (husking) matures in 118 days, thrives on poor soils. This well known type is a favorite in our neighboring counties of Bucks and Montgomery, from where we get our source of seed. The ears are white on outside, but sides and inside of grain are yellow. This does well on both strong and poorer types of soils. A good all-around corn for average farm conditions.

Eureka (ensilage) rarely matures in this territory. Requires rich soil. This is the best known of ensilage corns, producing great tonnage, but carrying a small percentage of ear to stalk. These big fodder corns seem to be losing their popularity in favor of the moderate ensilage corn where there is a greater percentage of ear to stalks, hence greater feeding value. In the event of having an acre or two left after filling the silo, the Eureka is almost a dead loss, while the shorter seasons varieties are readily taken care of as husking corn.

Virginia Red Cob (ensilage.) This is also a very popular ensilage variety where a large foddered corn is desired.

WHEAT

THE best varieties for Pennsylvania are the following:

Penna. 44, Fulcaster and Red Rock for bearded wheats, and Leips Prolific and Fultz for smooth wheats.

It is generally recognized that the bearded wheats will out-yield the smooth varieties' also are more in demand by the miller.

Two of the serious enemies of wheat are: The Hessian Fly and the Angumois Moth. The former may be controlled to a great extent by late planting, the latter may be controlled by the following method.

What to use. Carbon bi-sulfide is the standard material for this purpose. It is a colorless liquid which vaporizes upon exposure to air, giving off a gas which is heavier than air. This gas settles down into the grain, displacing the air, and is fatal to all insect life, without injuring the grain for either human consumption or seed purposes. It may be obtained from druggists or wholesale drug dealers for about 17c to 35c per pound (pint).

Where to fumigate. It is essential that the grain or other products to be fumigated be placed in a tightly closed room, bin or other receptacle. For small amounts a barrel or tight box is quite satisfactory. All cracks or knot-holes in the floor or sides of the room, bin or receptacle should be covered over to prevent the gas from escaping. If a barrel or other vessel with an open top be used, it can be made fairly tight by placing blankets or canvas tightly over the top, providing the bottom and sides are air-tight. Fumigating in an open crib is a waste of time and material.

When to fumigate. Fumigate only on a fairly warm day when the temperature is 60 degrees F. or above. The insects are more active on warm days, and are more readily killed than on cool days when they are not active and breathe but little.

Amount to use. For about 1000 cubic feet of space (or 800 bu.) use from five to eight pounds (or pints) of carbon bi-sulfide, depending upon the tightness of the bin or receptacle; if it is not air-tight or practically so, or if the temperature is below 60 degrees F., use a much larger amount of carbon bi-sulfide; there is no danger of using too much. For a tight barrel an average dose of about one-half teacupful is sufficient if the top of the barrel is tightly covered.

How to use. The carbon bi-sulfide may be poured directly upon the grain or seed without injuring it for planting or seed purposes. For fumigating large amounts of grain in the bin saturate burlap sacks or cotton waste and shove these into the grain a foot or two below the surface; in this way the gas will diffuse more thoroughly through the grain. For deep bins apply the material to the center of the bin by pouring it down through a pipe which has been pushed down into the grain. After the material has been poured down into the pipe pull out the pipe. Leave the bin or receptacle closed for from twenty-four to thirty-six hours. There is sometimes danger from the infested grain heating after being

fumigated if the infestation has been serious; therefore, shift the grain by shoveling it over, and air it out.

Caution. Carbon bi-sulfide is highly inflammable; therefore, make the application in daylight and do not bring fire or flame of any kind (such as from a lighted match, pipe, cigar or lantern) near the gas. As little as possible of the gas should be breathed because, although it is not necessarily fatal to human life, it is apt to nauseate one if very much of it is inhaled.

Hydro Tetra Chloride is often used when fumigation is to be done on a large scale, as this gas is non-inflammable.

SPRING WHEAT

A valuable crop to use in place of oats, it does not yield quite so heavily as Winter varieties, but produces a high quality milling wheat.

BUCKWHEAT

BUCKWHEAT will produce a better crop on fertile, poorly tilled lands than any other grain if the climatic and other conditions are favorable. It responds to good treatment, however, with increased yields. It is well suited to light, well-drained soils, such as sandy loams, and to the silt-loam soils. It is not a good crop for heavy, wet soils. It needs but little lime, growing well where alfalfa and red clover will not succeed; in fact, it seems to prefer an acid soil.

Buckwheat does best where the climate is moist and cool. It is very sensitive to cold, being quickly killed when the temperature falls to freezing or at most to 3 or 4 degrees below. Nevertheless, it is grown far north and at high altitudes. This is due to its short growing season, only 10 to 12 weeks, and to the small amount of heat required for the total development of the crop. At blooming time it is sensitive to high temperatures and to dry weather, especially when both day and night are hot or when accompanied by hot, drying winds. Hot weather with constant rain also is unfavorable. Under such conditions many or all the flowers then in bloom may be blasted and produce no grain. Rather high temperatures during the day apparently are not destructive if the nights are cool, the winds not excessive, and the soil not too dry. Unfavorable weather in the principal flowering period tends materially to reduce the yield. A few days of unfavorable weather at this time may seriously reduce the yield or even destroy the crop altogether. Largely for this reason, buckwheat is often an uncertain crop, especially in regions where these unfavorable conditions are likely to occur. To avoid them as much as possible, sowing is delayed as long as it is safe to do so, thus allowing the principal growth in warm weather and the formation of seed in the cooler weather of late summer.

In event of clover failure in wheat. Buckwheat and grass seed have often been used with great success, after the wheat is harvested. This affording a crop of Buckwheat and a stand of grass.

RYE

THE old standby can be grown on almost any soil. Will bear planting any time in the fall that the ground can be worked. The same is true of **Rosen Rye**. This is a native of Michigan, is a higher yielder than our common or Pennsylvania Rye, producing yields in some cases as much as wheat.

Spring Rye often used with oats as a crop to be threshed and ground for hog feed.

OATS

PLANT northern grown seed. Seed early. Early and medium varieties best. Prepare seed bed carefully. Drilling is better than broad casting. Treat early oats for smut, it only costs 1 cent per bushel. Save the crop by good shocking and by stacking.

The supply of seed oats is very scarce in this region, and we urge our customers to order early their supplies.

We list only oats that are heavy weighers, the farmer does not want large-hulled light-weight oats.

We advocate using $2\frac{1}{2}$ to 3 bushels per acre by weight, and drilled in.

Swedish Select. (known on the Pacific coast as Shadeland Climax). It is especially suited to dry or clayey soils, with a wonderful root development. Has a stiff straw and has a tree or branching head. In the Wisconsin Experiment Station in many years trial, it led all others in yield by seven to eight bushels per acre.

This oats comes from the extreme northwest and is very hardy.

Sixty-Day Oats. This has led all other varieties in yield at our Pennsylvania station. It is the earliest oats grown. It is better suited to our hot summer than some of the other varieties. We have a limited quantity of this splendid oats and recommend it more highly than the larger or later type for Chester, Delaware, and nearby counties or further south.

Ellwood Seed Oats. This is a splendid medium season, large growing, good yielder. We can offer this at a low price.

Improved White Russian or Side Oats. This very productive, stiff strawed, plump grained, mid-season oats is becoming more popular every year owing to its unusual yield season after season. This oats is bought in North Dakota and is truly a wonderful oats for this territory.

Standard Oats. For one demanding a truly high quality northern grown seed oats at a very moderate price, this is very satisfactory seed.

Oats is generally considered a rather questionable crop for our climate, but is almost necessary to fit into our rotation. Its recognized substitutes for occupying the field are ensilage corn, soy beans, barley, potatoes or spring wheat.

BARLEY

A SHORT season crop very well adapted to our rotation. The spring varieties should be planted very early in the spring, thus giving a carbo-hydrate feed about equal to corn just at the time our corn crib is empty. It is very valuable as a nurse crop with clover or alfalfa, as it ripens about July 1st, before the dry weather sets in.

Beardless Barley is easy to handle but not quite such a high yield as our common 6 row or bearded variety. Hulless barley is a very valuable crop in that it is free from the hull; therefore is desirable for milling purposes. This seed is very scarce but we have been fortunate in securing a limited supply.

Winter Barley. This valuable crop comes from Northern Michigan, is often planted in place of wheat. Yielding heavier straw and more grain than wheat, does not lodge readily and supplies 50-55 bus. of good home grown feed per acre, and as one of our customers puts it,—“more dollars and cents per acre than any other winter grain.” This crop for best results should be planted before Sept. 15th, thus allowing a more valuable time in our corn fields in the fall.

POTATOES

S EED of strong vitality is vital to success. The loss from poor seed is of startling proportions. Many have abandoned planting, believing their land unsuited to potato growing, when successful growers on other soils would have failed with the same seed. Experiments prove that the seed used, largely governs the yield. No care can produce good crops where plants are weak. Failure is sometimes due to other causes, but the usual cause is poor seed. If the parent vine is vigorous with ability to resist disease, so will its tubers be, and if properly stored and planted with due consideration to fertility, cultivation, spraying, etc., will produce a good crop.

The recognized sources of quality seed potatoes today are New York and Michigan, with Potter County, in our own state, making strides in the production of Russetts and Spaulding Rose.

We aim to handle only certified seed: that is, seed that is grown under the direct supervision of state authorities insuring freedom from disease. It is common knowledge in this section that potatoes coming from the potato growing areas where the short, cool, moist seasons and high altitude are favorable for producing high class seed, have outyielded our home-grown seed; in some cases, as much as 200 bu. per acre.

This is particularly true of “Petosky” or Russett variety which, under adverse conditions, yielded as high as 250 bu. per acre in our Chester Co. soils.

We recommend as varieties suitable to our soils:—Spaulding Rose, Irish Cobblers, Green Mountains, Smooth Rural New Yorker, Petosky or Russett Rural.

Given that one starts with good seed potatoes, the next step is the preparation of the soil. For best results clover sod should be plowed down. Barn yard manure is very beneficial but a complete fertilizer about 2-8-5 is usually recommended.



Russet Seed Potatoes

tent and shallow cultivation is very desirable.

In summing up the reasons for failure;

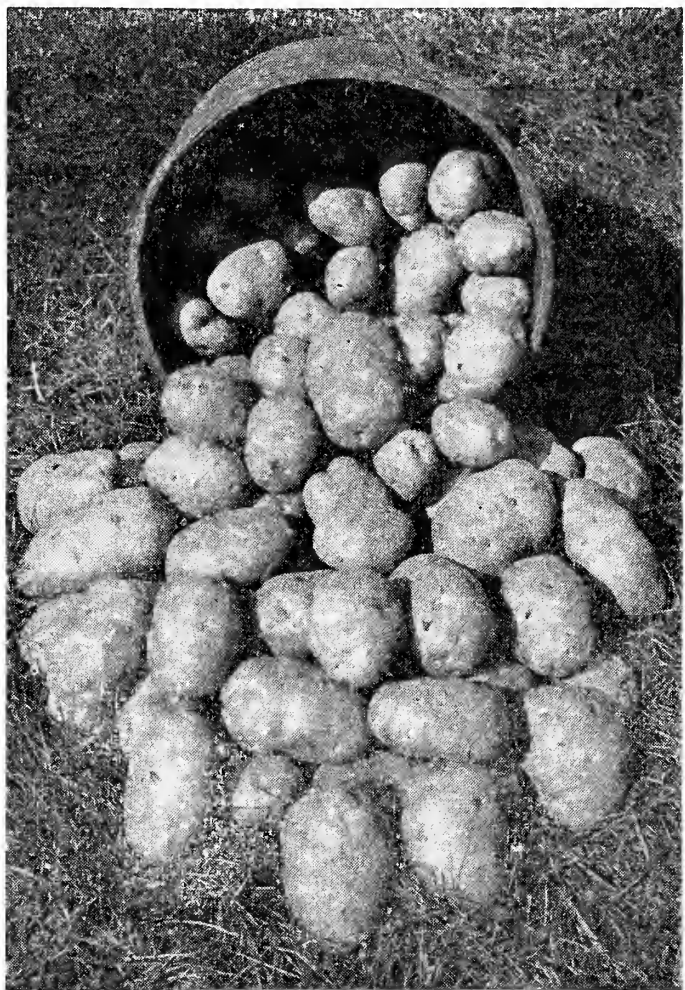
1. We find that one of the chief causes is poor seed. Understand, that if you have 80% stand instead of 100%, you are actually throwing away 20 to 40 bu. per acre of your crop.

2. Use plenty of fertilizer, manure and cover crop. The lack of fertilizer makes heavy inroads upon our crops.

3. If, as it has been proven, there are 25 to 50 bu. per acre to be gained by spraying at the right time with the proper pressure, it certainly pays to spray.

4. Cultivate ! It pays !

Thorough spraying is the next essential. It is very important that a pressure of about 250 lbs. be used in order to drive the spray material well in among the leaves. Spraying should be applied every ten days through growing season. Persis-



Green Mountain Potatoes

USEFUL INFORMATION

Kind of Seed	lbs. per ba.	lbs. sown per acre	Time of Planting	Growing Period	Best Source
Alfalfa	60	20-30	Mar., May, Aug., Sept.	Perennial	Mont., Dak., Idaho
Sweet Clover	60	20-30	Mar., May, Aug., Sept.	Biennial	Middle West
Red Clover	60	20-25	Mar., May, Aug., Sept.	Biennial	North West
Alsike	60	10-20	Mar., May, Aug., Sept.	Perennial	Middle West
Crimson Clover	60	12-15	July, Aug.	Annual	Del., Maryland
White Dutch Clover	60	10-15	Mar., May, Aug., Sept.	Perennial	West
Timothy	45	10-25	April, May, Aug., Oct.	Perennial	Middle West
Rape	50	8-10	April, Aug.	60 days	Europe
Millet	50	40-50	June 1-15th.	60-90 days	Middle West
Canada Peas	60	70-120	March, April.	60 days	Canada
Cow Peas	60	90-120	May, Aug.	60-90 days	South
Vetch	60	25-90	April, May, Aug., Nov.	Annual	Oregon
Soy Beans	60	12-90	May, June	90-140 days	Local
Corn (shelled)	56	12-80	May 5-30th.	90-130 days	Local
Corn (ear)	70	12-80	May 5-30th.	90-130 days	Local
Wheat	60	120-130	Sept., Oct. or spring.	Annual	Local, Mich.
Buckwheat	48	50-60	July 1-10th.	80-100 days	Local
Oats	32	90-100	March, April.	60-90 days	Canada, Dakota
Rye	56	90-100	Aug., Dec., or spring.	Annual	Local, Mich.
Barley	47	90-120	Mar., April, or Sept.	Annual	Wisconsin
Potatoes	60	700-900	Mar., May, or July.	90-150 days	Mich., N. Y., North

Collection of Family Vegetable Seeds

THIS is a very brief collection of varieties of vegetables that have stood the test of years and are sure yielders, good growers and have quality.

Here, in a few lines, are the varieties for the farmer or busy man who does not care to wade through long lists of vegetable varieties. All varieties placed in order of maturing.

BEANS

Green Pod.—Stringless Green Pod.—The finest of green beans entirely stringless.
 $\frac{1}{4}$ lb., 15c; 1 lb., 35c.

Yellow Pod or Wax.—Improved Golden Wax. $\frac{1}{4}$ lb., 15c; 1 lb., 35c.

BUSH LIMA BEANS

Fordhook Bush Lima.— $\frac{1}{4}$ lb., 15c; 1 lb., 45c.

Burpee's Improved.— $\frac{1}{4}$ lb., 15c; 1 lb., 45c.

POLE LIMA BEANS

Dreer's Improved Pole Lima.— $\frac{1}{4}$ lb., 15c; 1 lb., 45c.

Early Leviathan.— $\frac{1}{4}$ lb., 15c; 1 lb., 45c.

BEETS

Crosby's Egyptian.—Quick grower, fine quality. Pkt., 10c; oz., 15c; $\frac{1}{4}$ lb., 35c.

Extra Early Eclipse.—Pkt., 10c; oz., 15c; $\frac{1}{4}$ lb., 35c.

CABBAGE

Dwarf Early Flat Dutch.—A fine strain. Pkt., 10c; oz., 25c; $\frac{1}{4}$ lb., 75c.

Large Flat Dutch (Late).—Very large flat head. Pkt., 10c; oz., 25c.

Danish Ball head (Late).—Fine keeper, smaller harder head. Pkt., 10c; oz., 35c.

CARROTS

Danver's Half Long.—Best all around Carrots. Pkt., 10c; oz., 35; $\frac{1}{4}$ lb., \$1.00

CAULIFLOWER

Snowball.—Best Cauliflower to be obtained. Pkt., 25c; oz., \$4.00.

CELERY

Giant Pascal.—Largest quick-growing type. Pkt., 10c; oz., 30c.

SWEET CORN

Howling Mob.— $\frac{1}{4}$ lb., 15c; 1 lb., 35c.

Golden Bantam.—Sweet, early. $\frac{1}{4}$ lb., 15c; 1 lb., 35c.

Country Gentleman.—Sweet, deep grained. $\frac{1}{4}$ lb., 15c; 1 lb., 35c.

Stowell's Evergreen.—Best late and main crop. $\frac{1}{4}$ lb., 15c; 1 lb., 30c; 5 lbs., \$1.35.

CUCUMBER

London Long Green.—Pkt., 10c; oz., 15c.

EGG PLANT

Black Beauty.—Pkt., 10c; oz., 50c.

LETTUCE

Wonderful.—The best of heading varieties. Pkt., 20c; oz., 90c.

Grand Rapids.—Best loose leaf. Pkt., 10c; oz., 20c.

ONIONS

Yellow Club Danver's.—Pkt., 10c; oz., 25c; $\frac{1}{4}$ lb., 75c.

PARSLEY

Fine Curled.—Pkt., 10c; oz., 15c.

PARSNIPS

Hollow Crown.—Pkt., 10c; oz., 15c; $\frac{1}{4}$ lb., 35c.

PEAS

Alaska.—Best early, smooth. Pkt., 10c; $\frac{1}{4}$ lb., 15c; 1 lb., 30c; 5 lbs., \$1.35.

Prosperity or Gradus.—Best second early. Pkt., 10c; $\frac{1}{4}$ lb., 15c; 1 lb., 40c.

Little Marvel.—Best dwarf. Pkt., 10c; $\frac{1}{4}$ lb., 15c; 1 lb., 40c; 5 lbs., \$1.85.

Telephone.—Large late. Pkt., 10c; $\frac{1}{4}$ lb., 20c; 1 lb., 45c; 5 lbs., \$2.10.

PUMPKIN

Yellow Cashaw.—Pkt., 10c; oz., 20c; $\frac{1}{4}$ lb., 60c.

RADISH

Scarlet Globe.—Pkt., 10c; oz., 15c.

White Box.—Pkt., 10c; oz., 15c.

SPINACH

Bloomsdale Savoy.—Pkt., 10c; oz., 15c; $\frac{1}{4}$ lb., 40c.

SQUASH

Hubbard.—Pkt., 10c; oz., 20c.

White Bush.—Pkt., 10c; oz., 20c; $\frac{1}{4}$ lb., 75c.

TOMATO

Earliana.—Best early. Pkt., 10c; oz., 40c.

Stone.—Late. Pkt., 10c; oz., 35c.

TURNIP

Purple Top, Strap Leaf.—Pkt., 10c; oz., 15c; 1 lb., 75c.

WATERMELON

Tom Watson.—Pkt., 10c; $\frac{1}{4}$ lb., 15c; 1 lb., 40c.

CANTALOUPE

Fordhook.—Pkt., 10c; $\frac{1}{4}$ lb., 25c; 1 lb., 60c.

...

LAWN GRASS

GOOD seed is absolutely essential in order to have a good lawn. The mixtures we offer are made up from the very best of seed (as free from chaff and weed seed as it is possible to obtain) and mixed for us according to formula that years of experience have taught to be the best for the requirements for which they are offered.

In preparing to seed a new lawn, the soil should be thoroughly worked up to a depth of from four to eight inches, but not deep enough to bring to the surface any clay subsoil. Apply bone meal or a good phosphate at the rate of four or five hundred pounds to the acre. Work this fertilizer into the soil with a fine tooth harrow or an iron rake. Sow the seed broadcast, first lengthwise and then crosswise, so as to insure an even distribution of the seed. Then cover the seed either by lightly raking over the ground or if dry enough not to stick to a roller the ground may be rolled. Use sufficient seed in the first sowing to obtain a good sod and you will not be put to the expense of seeding over bare spots every spring. We advise sowing a hundred pounds to the acre.

Bare spots should be treated much the same as preparing a new lawn, but, of course, they cannot be worked so deep. An old lawn that has become thin may be renovated by working up the surface with a fine tooth harrow, applying bone meal and seeding about half the quantity of seed for making a new lawn.

In preparing the lawn for the winter, we have found that the best results are obtained by having the lawn go into the winter closely cut. Stable manure may be applied to fertilize the lawn in the winter and should be raked off early in the spring, or a dressing of bone meal may be put on in the spring.

Seed should be sown in the spring, but may be sown any time during the summer or early fall.

Prices are all by pound, **One Hundred Pounds** being required to seed an acre, which equals a space of 70 yards long by 70 yards wide, making 4900 square yards, or its equivalent, no matter what the shape is. 1 lb. for space of 20 x 20 feet or 400 square feet.

At single pound rates we prepay postage. At the rate per 100 pounds or fraction, the seeds will be shipped by Express or Freight at expense of purchaser. Lots of 10 pounds and over at 100 pound rate.

Great Valley Mixture.—A superfine mixture of grass seeds that produce a fine turf which is green throughout the entire summer. **Lb., 40c; 100 lbs., \$34.00.**

GRASS FOR SHADY SPOTS

A mixture of those grasses best suited to grow under the trying conditions of shade from trees, buildings, etc. If you have any bare, unsightly spots in your lawns or yards, from lack of sunshine, use this mixture.

We recommend loosening the ground well; then applying a small coating of slaked lime. Rake this in, and sow our Shady Place Mixture in two directions, using amount suggested in lawn making described above. 1 lb., 54c; 100 lbs., \$38.00.

Terrace Sod.—Produces fine heavy turf which will not wash under ordinary conditions. Lb., 54c; 100 lbs., \$38.00.

GOLF LINKS

Fairway's Mixture.—Lb., 52c; 100 lbs., \$36.00.

Putting Green Mixture.—Made up of fine leaved grasses which produce a smooth, even turf. Lb., 62c; 100 lbs., \$42.00.

FEEDS

IT is not the cost price per ton of feeds which determines their relative economy, but the relative cost of net energy and digestible protein in the different feeds.

For convenience in computation and comparison, make a list of the available concentrated feeds both home grown and purchasable, with their market prices, determine which mixture contains the necessary amount of digestible protein, and furnishes net energy at the lowest price, and which is at the same time healthful, palatable, bulky and includes a variety of concentrates.

None are ideal when fed alone. Feeds are more readily digested when they are rather light and bulky, permitting the digestive juices easily to penetrate them; heavy feeds like cornmeal, cottonseed meal, or middlings yield to the digestive juices much more slowly. In selecting feeds for a grain mixture use as a basis the economical home grown feeds such as: corn, oats, barley, etc; then combine with these those concentrates such as: cottonseed meal, gluten meal and oil meal, which can be economically purchased bearing in mind that a variety should be used. A feed composed of Bran, Beet Pulp, Cottonseed Meal, Gluten Meal, Coconut Oil Meal, may be used with corn or oats to build a very satisfactory ration. A good rule to follow is: use a high class 24% or 25% protein ready mixed feed containing an excess of the concentrates, cut this down with your home grown crops, making a balanced feed containing about 20% crude protein or 16% digestible, making an ideal ration for the dairy cow.

A 20% dairy feed can be purchased on the market, if home grown corn or oats are not available. In buying such feed, be careful to see that the fibre content is low. Protein is the most expensive constituent of feeds and of first consideration especially when used to supplement the ordinary farm feeds, which are deficient in protein for most feeding purposes, especially for growing animals and for dairy cows. Protein is required for the growth of animals, for tissue formation, while fat and carbohydrates furnish energy. As a farmer generally buys concentrate feed to supplement his farm grown feed he will need to buy high protein

feed to properly balance his ration, the analysis of his finished feed will depend somewhat upon his animals and requirements, and upon the kind of roughage he has on hand; for instance, if he is feeding timothy hay and fodder, he will need a much richer feed than if alfalfa and clover are used as a roughage. A maintenance ration for horses should not be as high in protein as for growing animals or dairy cattle.

SELECTING FEEDS

Bear in mind the following characteristics of each:

Alfalfa Meal, more convenient to handle than hay, much easier to adulterate, rich in protein.

Beet Pulp, when soaked up, a good substitute for silage or roots.

Bran, (Wheat) light, bulky, appetizing, high in mineral matter, high in crude fibre.

Brewers' Grains, rich in protein, very variable in composition, bulky, must be fed with other feeds. Never use yeast grains.

Buckwheat, low in protein—usually pays to sell it and buy back the middlings.

Buckwheat Middlings, heavy, usually economical source of protein, tend to make soft, oily butter.

Corn, easily digested, usually cheapest source of energy. Pays to grind to cornmeal in ration because of bulky nature. Grind fine.

Cottonseed Meal, high in protein, heavy, should be fed with something else, makes for hard butter, relatively cheap source of protein, should not constitute more than one-third of the mixture, but it is rarely advisable to use more than 12 to 16% to insure a palatable food.

Distillers' Dried Grains, mostly corn, light, bulky, high in protein, not readily eaten alone.

Distiller's Dried Grains, mostly rye, similar in character to the corn grains, lower in digestible protein.

Gluten Feed, rich in protein, should be fed with other grains, usually a desirable and economical protein.

Gluten Meal, very digestible.

Hominy, usually economical source of energy, low in protein, palatable, heavy. Good substitute for corn meal if needed.

Molasses, a non-protein feed, good appetizer.

Oats, good feed, rich in mineral matter, high in crude fiber, not high enough in protein to use for balancing a ration; good for calves, especially so if ground and hulls sifted out.

Roots, desirable, substitute for silage, usually cost more to grow.

Silage, succulent, appetizing, economical, low in protein, should be fed after milking, a little hay or dry fodder should always be fed with it. One of the best farm grown feeds for milk products.

Bulky Feed, bran, gluten feed, distillers' grains, corn and cob meal.

Constipating, cottonseed meal, corn fodder and hay.

Laxative, oil meal, bran slightly, silage, roots.

Not Palatable, gluten feed, brewers' and distillers' grains, cottonseed meal.

AVERAGE COMPOSITION OF FEEDING STUFFS

Name of Feeding Stuffs	% Protein	% Fat	% Fibre	Therms of Energy
Alfalfa Meal	14.3	2.2	25.0	34.41
Barley	12.4	1.8	2.7	80.75
Beet Pulp, Dried	9.5	4.0	15.4	60.10
Brewers' Dried Grain	19.9	5.6	11.0	60.01
Buckwheat (meal)	10.0	2.2	8.7	
Cocoanut Oil Cake	19.7	11.0	14.4	
Corn	10.4	5.0	2.0	88.84
Corn Bran	9.0	5.8	12.7	
Corn and Cob Meal	8.5	3.5	6.6	72.05
Corn Gluten Meal	29.3	11.8	3.3	88.80
Cottonseed Meal (dried grains).....	41.0	8.1	9.2	84.20
Corn Distillers (dried)	30.4	12.7	11.0	79.23
Hominy Feed	9.8	8.3	3.8	84.00
Linseed Oil Meal	32.9	7.9	8.9	78.92
Oats	11.8	5.0	9.5	66.27
Rye	10.6	1.7	1.7	81.72
Soy Bean Seed (Soja).....	34.0	16.9	4.8	
Wheat	11.9	2.1	1.8	82.63
Wheat Bran	15.4	4.0	9.0	48.23
Wheat Middlings	14.9	4.5	7.4	
Yeast Dried Grains	20.3	7.8	17.4	
Roughage				
Clover Hay, Alsike	12.3	2.9	25.6	
Clover Hay, Red	12.3	3.3	24.8	34.74
Corn Silage	1.7	0.8	6.0	16.56
Corn Stover	3.8	1.1	19.7	26.53
Oat Straw	4.0	2.3	37.0	21.21
Timothy Hay	5.9	2.5	29.0	33.56

MEASURING AND ESTIMATING FEEDS

Measuring Corn. A bushel of well-settled ear corn contains 3,888 cu. in. To find the number of bu. in a crib it is necessary to multiply together the length, width and height in inches and divide the product by 3,888. If the sides of the crib are slanting, it will be necessary to multiply together one-half the sum of the top and bottom widths, the height and length.

Estimating Hay. As hay is often sold in the mow or stack where it is impossible to obtain its weight, a rule for estimating weight is convenient. As the weight varies according to the kind of hay, the time of cutting, length of time in mow, position in mow, etc., an approximate estimate is the best that can be made. The space required for a ton varies—

343 cu. ft.—7 x 7 x 7—for Western prairie hay cut at the right time and well settled; while 512 cu. ft.—8 x 8 x 8—is used for clover and timothy well settled.

Grain Estimates. A wagon box 10 ft. long, 3 ft. wide and 24 in. deep will hold 24 bu. of loose ear corn, or 48 bu. of shelled corn or grain. A bushel of loose ear corn occupies about two and a half cu. ft.

A crib 10 ft. wide, 10 ft. high and 16 ft. long will hold 711 bu. of ear corn. Of ear corn well-settled in the crib, one bu. is contained in two and a quarter cu. ft. In figuring shelled corn and grain, the same space will hold one and four-fifths times as much grain as it will of well-settled ear corn. A bin that will hold 800 bu. of ear corn will hold 1,440 bu. of shelled corn or other grain.

Weights for Barn Use. Frequently you may wish to use a given weight of feed and have no scales. The quart weight of various feeds is as follows:

Cottonseed meal	1.5 lbs.
Linseed meal, old process	1.1 "
Gluten meal	1.7 "
Gluten feed	1.2 "
Wheat bran, coarse5 "
Wheat, Middling coarse8 "
Wheat, middling fine	1.1 "
Mixed wheat feed6 "
Cornmeal	1.5 "
Oats	1.2 "
Rye bran6 "

FERTILIZER

GREATEST profits from crop production usually come from growing big yields of first quality crops.

Are your crops yielding heavy enough to pay you good interest on your investment?

The big reason for the growth in the consumption of fertilizer lies in the fact that commercial fertilizers increase profits whenever properly used. Our soils are still being robbed of their available fertility, and consequently in many cases are not paying reasonable profits. Fertilizers will bring these soils back into the money making class.

Fertilizers give crops a good start, hasten maturity, improve quality, and increase yields. Fertilizers pay on rich soils. Do not ignore the plant food question because your soil produces good yields.

It can produce bigger and better crops. Be fair to your farm. There is no mystery about the action of fertilizer in plant growth.

Nitrogen, or ammonia causes quick and vigorous growth at stalk or stem. Available **phosphoric acid** helps fill the grain or fruit and hastens ripening. **Potash**, strengthens the straw or stalk and helps to plump and fill the grain and fruit.

Hay is grown for the stalk or stem, hence needs a larger proportion of nitrogen than grain crops. The grain crops need large amounts of available phosphoric acid and potash; potatoes and other root crops require a large amount of potash.

Comparatively rich soils need complete fertilizer to make maximum yields. Run down soils need a great deal of plant food, in fact, there are no soils in which the natural plant food is in the best proportion to produce the best crops, because the yearly drain on the plant food is uneven.

Generally speaking, it has been proven that the use of a fertilizer containing all three of the essential elements of plant food gives best all round results under average conditions.

The proportions of plant food ingredients should be varied to suit soils, previous treatment of the soil and what the previous crop indicated (whether straw was weak or strong, whether the crop matured fast or slow.)

Generally speaking, the following formulae may be used as a base upon which to work.

	Ammonia	Phosphoric acid	Potash
Potatoes	2	8	5
Corn	1	8	2
Wheat	2	12	2
Oats	1	8	2

LIME

MANY soils become extremely sour or acid. Alfalfa, red clover, alsike, and other legumes will not make maximum growth under such conditions. The yields of other crops are often lessened because of a sour condition of the soil. Sorrel and moss thrive well on a sour land. Abundant growth of these weeds is, therefore, a strong indication that a soil is acid. Lime corrects acidity and improves the texture of both light and clayey soils. It also liberates some potash and phosphoric acid and makes the condition favorable for the growth of beneficial soil bacteria.

There are three different forms of agricultural lime; limestone or calcium carbonate, burned lime or calcium oxide, and hydrated lime or calcium hydroxide.

Raw limestone, chemically known as calcium carbonate or carbonate of lime is the form in which nature has placed lime in the earth. The limestone is stored in the earth in the form of rock which must necessarily be reduced to a fine powder before it has any value for agricultural purposes. The value depends upon its chemical purity or freedom from impurities, its fineness and solubility. Limestone also must be finely ground or pulverized to permit of a thorough and even mixture with the soil.

Plants cannot use mineral matter unless it is soluble in water. The softer the limestone the more readily the action whereby the acidity is neutralized.

Burned Lime is the product obtained by applying heat to the raw limestone, thus driving off the carbon dioxide. Every ton of chemically pure raw limestone rock so treated will produce 1120 lbs. of burned lime.

This was the common form of lime for many years, being handled as burned lime, but allowed to slake in the open, then applied to the ground. The burned lime cannot be kept as such for any length of time unless it is stored in an air tight chamber. It has such a strong affinity for water that it will change to hydroxide or **hydrated lime**.

In the preparation of **commercial hydrated lime** the burned lime is treated with water; to the 1120 lbs. of burned lime is added 360 lbs. of water which produces 1480 lbs. of hydrated lime; in other words to produce 2000 lbs. of hydrated lime about 481 lbs. of water are required to complete the chemical process.

Theoretically then 1120 lbs. of burned lime, 1480 lbs. hydrated lime, and 2000 lbs. of ground limestone have the same value all things being equal. Hydrated lime, like burned lime, when exposed to the air will not remain as such but will unite with the carbon dioxide in the air and form calcium carbonate, the same chemical form it was in before burning. The matter of selecting the form of agricultural lime depends upon the price of the various forms delivered to one's farm, taking into consideration the value received by the land for each dollar expended.

WEEDS

"A plant not wanted or a plant out of place" is a Weed. There are useful weeds, such as Quack grass, used to hold soil and as a forage plant.

Then again under the definition above, there are weeds that are not weeds, such as Rye in the Wheat.

A knowledge of weeds is necessary to the farmer; are they annuals, biennials or perennials? And how shall they be eradicated?

Annuals are plants that grow from seeds in the spring, completing their growth in one year. They have small roots and a large number of seeds. Cockle, Wild Mustard and Rag Weed belong to this class.

Biennials, require two seasons to mature.

Annuals and Biennials are not difficult to destroy by proper cultivation or cutting. Where plowing is not advisable, cutting should be made at frequent intervals to keep seed from forming.

Perennials, or many year plants, offer a more difficult problem and special methods of cultivation and root treatment must be followed. We recommend getting advice from State College, Department of Agricultural Extension for treatment of badly infected areas.

All kinds of weeds can be kept under control by a proper crop rotation and vigilance, but land that has become badly infected with particularly noxious perennial weeds, such as the small flowering Morning Glory or Bind weed, Canada Thistle, Buckhorn, Chickory, etc., needs an especial and intense treatment.

Practically all weeds of today have been brought in by careless seed buying. We are glad to know that the buying public are paying more attention to clean seed today than ever before. They realize that for the saving of a dollar or two in the price of seed they have been paying heavy tolls in the loss of crops, decreased sale value of hay and grain besides literally covering their fields with weeds that it may take years to eradicate. As a means of correcting or preventing its recurrence, the farmer of today is buying the best possible seed from the best source and is investigating it himself far enough ahead of planting season to assure himself that he is getting pure seed or that the small percentage of impurity is not going to introduce on his farm a vast number of noxious weeds.

If the percentage of impurity is harmless, whether it be a weed or some inert matter, a purity of 99 per cent. means only the loss of the price of a few ounces of seed. On the other hand in a bushel of alfalfa seed of 99 per cent purity, there is a possibility of 131,700 weed seeds, which if harmful, may produce 42,000 to 65,000 weeds per acre.

In alsike the figures are more astounding owing to the small size of the seed, and there is a possibility of getting 419,000 weeds in every bushel of seed that has a test of 99 per cent. purity. Be sure that the percentage of impurity whatever it might be is harmless. The impurities carried by farm seeds have an important bearing on the real quality of seed. Their quantity may be sufficient to unduly increase the cost of the good seed and their character may be that of injurious weeds. Seed impuriites are classified:

1. As inert material.
2. A foreign seed, including both other crop seed and weed seeds.

Before buying, procure samples and have tests or test for yourself by spreading samples on white paper, and pick out all weeds and foreign seeds, broken grains and inert matter, and examining these for harmful weeds.

The following bulletins may be found very useful in the selection of seed.

These may be had on request from the various sources.

Farm bulletin No. 428 U. S. Dept. of Agriculture, Washington, D. C.

Farm bulletin No. 1002, Washington, D. C.

Bulletin No. 101, State of Nebraska, Dept. of Agriculture, Lincoln, Neb. Weed Leaflets No. 1 to 10, Dept. of Agricultural Extension, State College, Penna.

The Chester County Farm Bureau Facts

*How It Stands in Relation to Others On a Number of Points,
[as Taken From the Census*

BY the Chester County Farm Bureau are supplied these facts from the census report concerning Chester County.

Chester County ranks in the United States, 81st in value of crops sold, 10th in value of animal products sold, 32nd in value of all farm products sold.

Rating in State—3rd in value of farm property, 2nd in value of live stock, 1st in value of dairy cattle, 3rd in number of dairy cattle, 2nd in value of horses, 3rd in number of horses, 5th in value of swine, 7th in number of swine, 6th in value of poultry, 4th in value of poultry products, 1st in production per cow, 1st in value of dairy products, 3rd in total value of crops, 3rd in total value of cereals, 7th in value of forage, 7th in value of vegetables, 8th in average of small fruits, 11th in number bearing trees of other fruits, 3rd in acreage of tobacco.

It contains 5,508 farms, about one-third of which are run by tenants.

In the State of Pennsylvania within the last ten years, emmer and speltz has decreased 73.5% in acreage; barley increased 80% in acreage; clover increased 27% in acreage; alfalfa increased 523% in acreage; timothy decreased 12.5% in acreage; soy beans were grown on 1,107 farms, against none reported 10 years ago.

The number of peach trees not of bearing age decreased 44%; the number of plum trees not bearing are decreased 52%.

Chester County yielded 50 bushels of corn per acre against 45.6 for the State.

Chester County yield of oats, 26 bushels, or 832 lbs. per acre; barley, 20 bushels, or 960 lbs. per acre; wheat. 18 bushels, or 1,044 lbs. per acre; all grasses except alfalfa, 1.3 tons; alfalfa 2.4 tons; potatoes 76 bushels per acre.

It is interesting to note that the potato yield was only 76 bushels per acre, while on 12 farms where disease free seed was placed by the Chester County Farm Bureau, the average increase over local seed was 90 bushels per acre.

In increase in alfalfa acreage and its yield over other grasses prove its superiority.

The increase in soy beans and clover and the decrease in timothy show the added interest in legumes.

The increase in barley and decrease in emmer and speltz is quite phenomenal.

That the value of our live stock is above the average is well illustrated by our rating as compared with our rating on number of live stock. The value of poultry and dairy cattle were estimated from the products sold instead of reported values as in 1909.

The value of honey and wax produced in Chester County during 1919 was only \$3,570, while one county produced \$45,417 worth. There is a great chance for the expansion of this industry in our county and any information desired will be gladly given by the Farm Bureau.

*Great Valley Seeds
Are Good Seeds*



Great Valley Mills

PAOLI, PA.